

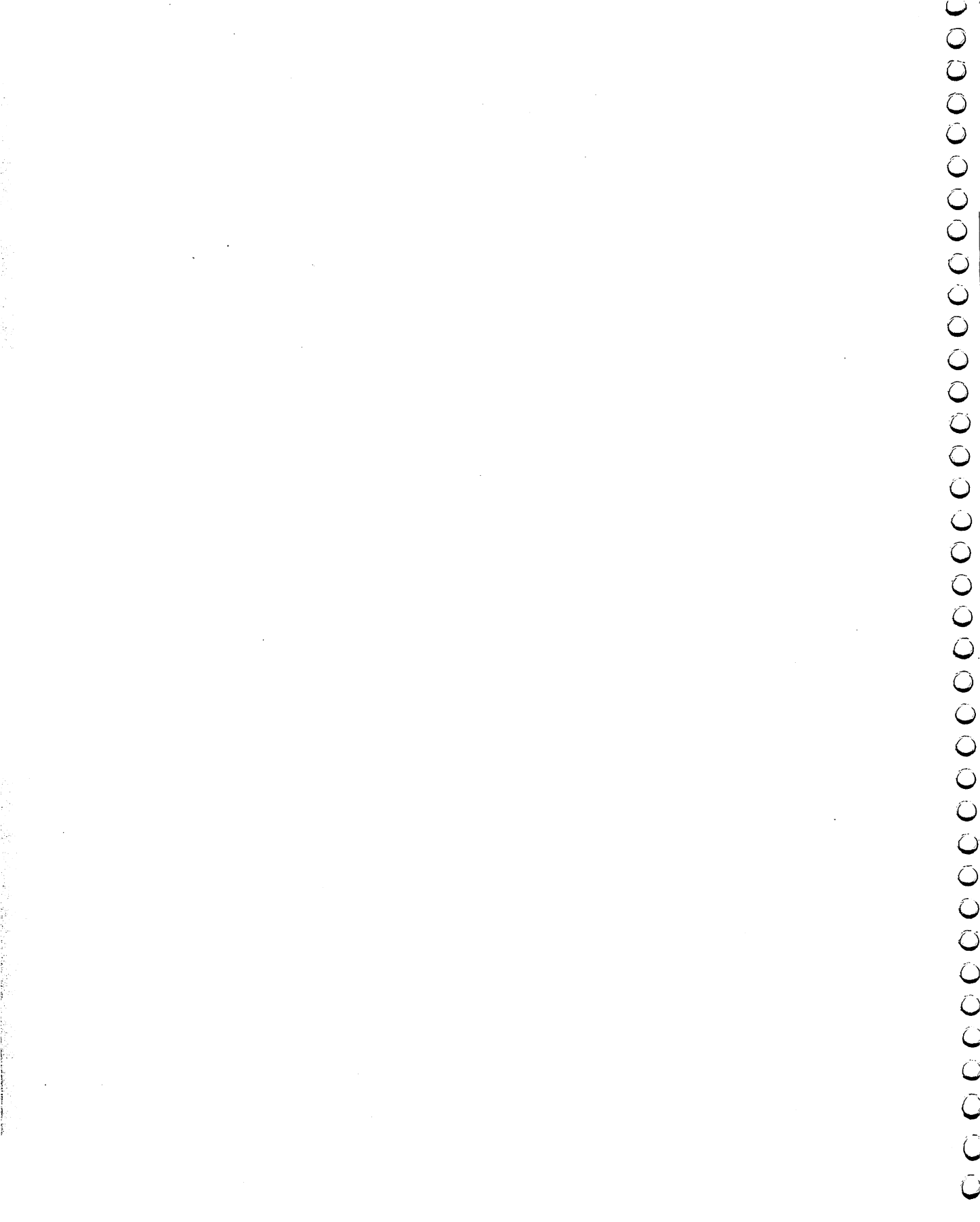
AMIGA

ART *expression*

The Amiga Illustration Program

User Manual

For Amiga Personal Computers





ART *expression*

User Manual
First Edition

Soft-Logik Publishing Corporation
We give you the tools to dream.

ART EXPRESSION USER MANUAL: FIRST EDITION: OCTOBER 1992

This manual was created using PageStream 2.2 on Amiga computers and was printed at 2540 dpi on a PostScript imagesetter.

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Table of Contents

Getting Started

Welcome to Art Expression	ix
Before You Begin	x
Checking Your Package	x
Required Equipment	xi
Making a Backup Copy	xi
Registering Your Copy	xi
Installing Art Expression	xii
Starting Art Expression	xiv
From the Workbench	xiv
From the Shell	xiv
Setting Defaults	xv
Getting Help	xviii
Online Help	xviii

Chapter 1: Art Expression Basics

What is an Illustrator?	1.1
Where to Start?	1.1
Basic Illustration Terms	1.2
The Art Expression Screen	1.3
Menus	1.3
The Illustration Window	1.4
The Toolbox	1.6
The Illustration Workspace	1.8
Setting the Workspace Size	1.8
Starting a New Illustration	1.8
Viewing the Illustration	1.9
Screen Redraws	1.10
Program Settings	1.11
Drawing Units	1.11
Drawing Prefs	1.11
Changing Screens	1.14
Screen Colors	1.14

Using the Coordinate Bar	1.15
Using the Rulers	1.15
Using the Grid	1.16
Using the Guides	1.17
Opening and Placing Illustrations	1.18
Opening an Illustration	1.18
Reverting to Saved	1.19
Placing Graphics	1.19
Saving and Exporting Illustrations	1.23
Saving an Art Expression Illustration	1.23
Exporting Graphics	1.24
Display Options	1.27
Display Modes	1.27
Showing Objects as Boxes	1.28
Using with Other Software	1.29
Quitting Art Expression	1.31

Chapter 2: Drawing Objects

Drawing Tools	2.1
Drawing Basic Shapes	2.3
Regular Polygon Tool	2.4
Line Tool	2.5
Box Tool	2.5
Rounded Box Tool	2.5
Ellipse Tool	2.6
Drawing Paths	2.7
Draw Tool	2.7
Arc Tool	2.8
Freehand Tool	2.11
Closing Paths	2.14
Continuing Paths	2.15

Contents

Chapter 3: Working with Objects

Selecting Objects	3.1
Stacked Objects	3.4
Moving Objects	3.6
Resizing Objects	3.8
Copying Objects	3.10
Copying to the Clipboard	3.10
Duplicating an Object	3.11
Cloning an Object	3.12
Transform Copying an Object	3.12
Deleting Objects	3.14
Grouping Objects	3.15
Locking Objects	3.17
Aligning Objects	3.18
Aligning Unlocked Objects	3.19
Aligning Locked Objects	3.20
Rotating Objects	3.22
Visual Rotation	3.22
Rotating an Object Numerically	3.23
Transform Rotation	3.24
Setting the Rotation Point	3.25
Centering the Rotation Point	3.25
Skewing Objects	3.26
Flipping Objects	3.28
Transforming Objects	3.29
Lines and Fills	3.30
Lines Styles	3.31
Fill Styles	3.33
Color	3.35
Adding, Deleting and Editing Colors	3.35
Loading and Saving Color Palettes	3.37

Chapter 4: Working with Paths

Paths	4.1
Working with Point Handles	4.3
Selecting Point Handles	4.3
Moving Point Handles	4.3
Moving Curve Handles	4.4
Moving Segments	4.5

Editing Points	4.6
Adding and Deleting Points	4.7
Adding Points	4.7
Deleting Points	4.7
Splitting and Joining Points	4.9
Splitting Points	4.9
Joining Points	4.10
Aligning Points	4.11
Converting Lines and Curves	4.13
Line to Curve	4.13
Curve to Line	4.13

Chapter 5: Working with Text

Text Basics	5.1
Fonts, Typefaces and Styles	5.1
Types of Fonts	5.1
Fonts Included with Art Expression	5.2
Creating a Text Object	5.3
Display Text as Boxes	5.3
Editing Text	5.5
Changing Fonts	5.5
Managing Fonts	5.6
Manipulating Text	5.8
Binding Text to Graphics	5.9
Placing Text in a Shape	5.11
Changing Text to Graphics	5.13

Chapter 6: Special Effects

Smoothing Paths	6.1
Flattening Paths	6.1
Binding Paths to Paths	6.2
Placing a Path in a Shape	6.4
Blending Objects	6.6
Blend Crossover	6.8
Optimal Blends	6.9
Composite Paths	6.11
Applying Attributes	6.12
Text and Composite Paths	6.12
Joining and Separating Paths	6.13
Using Composite Paths	6.13

Chapter 7: Printing Illustrations

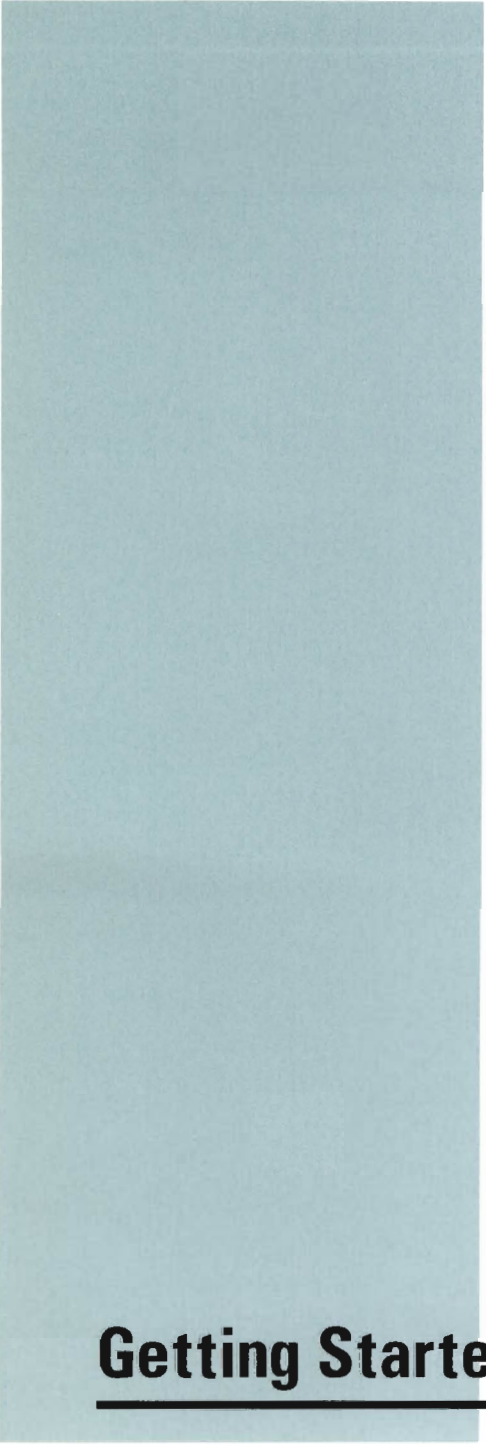
Printing Your Illustrations	7.1
Selecting a Printer Driver	7.1
Setting the Print Area	7.2
Printing to PostScript Printers	7.3
Resident Fonts	7.3
Downloaded Fonts	7.4
Memory and PostScript Limitations	7.4
Printing	7.5
Print Options	7.6
Printing Color Separations	7.9
Using a Service Bureau	7.11
Printing to Preferences Printers	7.12

Appendix A: Glossary

Appendix B: Special Characters

Appendix C: Troubleshooting





Getting Started



Getting Started

Welcome to Art Expression!

Welcome to Art Expression! You have just purchased the leading illustration program for Amiga computers. The Amiga has always had drawing programs, but it has never had a serious illustration program until the release of Art Expression.

Art Expression is designed for professional artists and hobbyists. Anyone can learn to use Art Expression's intuitive interface, but don't let its apparent simplicity fool you—Art Expression is the most powerful drawing program ever designed for the Amiga.

Art Expression allows you to manipulate text and graphics in ways that most people can only imagine. You can warp text to virtually any shape and create complex shaded drawings. Art Expression also has powerful color capabilities and can be used with virtually any printer. With so many leading edge features, you'll never need another Amiga drawing program.

Art Expression is a tool for you to translate your imagination into reality. It comes with features and power to spare. What you do with all this power is up to you. After all, it's your imagination.

If you have ideas on how we can make Art Expression or our other publishing tools better, drop us a note. We're always trying to improve.

Soft-Logik Publishing Corporation

We give you the tools to dream.

Before You Begin

Before you begin to use Art Expression, there are a few things you should do to make getting started as easy as possible. You should:

- check the contents of your Art Expression package;
- check your system to ensure you have the required equipment;
- make backup copies of your Art Expression master disks;
- register your copy of Art Expression; and
- install Art Expression.

Checking Your Package

There are several items in the Art Expression box. You should ensure that the following items are present before installing Art Expression:

- Art Expression User Manual: this volume;
- Art Expression Lessons Manual;
- Art Expression Quick Reference Card;
- Registration Card;
- BME User Manual;
- BME Addendum: an addendum to the BME User Manual;
- Art Expression Disks: the Art Expression Program Disk, Font Disk 1, Font Disk 2 and the BME program disk.

If any of these items are missing you should contact your dealer for a replacement copy. Product literature and other items may be included in your package.

Required Equipment

To use Art Expression, you need the following equipment:

Minimum Required

Amiga computer with

- 68000 processor
- standard Amiga monitor
- 2 floppy disk drives
- 2 MB of memory (512 K chip RAM)
- AmigaDOS 1.3
- Preferences compatible printer

Recommended (Optional)

Amiga computer with

- 68020 or 68030 processor
- multisynch monitor
- hard drive (3 MB with all options)
- 2 MB of memory (1 MB chip RAM)
- AmigaDOS 2 or 3
- PostScript laser printer

Art Expression can be used without any difficulties on a minimum system configuration. Preferences printing generally requires 1MB of chip RAM.

Making A Backup Copy

You may make one backup copy of the Art Expression disks. Make your copy with the Workbench or a backup utility. After you have made your copy, store the original disks in a safe place. For more information on copying disks, refer to your Amiga Workbench manual.

The Art Expression disks are not copy protected. Your software license authorizes you to use this software on one computer at one time only. Your copy may be used on more than one computer, for example, at home and at work, but never at the same time. If more than one copy will be used simultaneously, you must purchase additional copies.

Registering Your Copy

You must complete and return the enclosed registration card in order to receive technical support from Soft-Logik. Keep the other part in a safe place. It has your Art Expression registration number which you will require for technical support and future upgrades.

Installing Art Expression

Art Expression uses the Amiga's standard Installer program. Insert your working copy of the Art Expression program disk in a floppy drive after booting your Amiga. Double click on the Art Expression disk icon. A window will open showing the disk contents.

Floppy Drive Installation

If your normal Workbench disk does not have an `Arp.library` file installed on it, you must copy this file from the `Libs:` directory for the Art Expression program disk to the `Libs:` directory of your Workbench disk. Boot off of your normal Workbench disk. Put your working copy of the Art Expression program disk in your second floppy drive and load it from there. Art Expression is now ready for loading.

Hard Drive Installation



Double click on the `Hard-Install`. The Installer will present you with several choices to customize Art Expression for your system.

Installation Notes

The Installer will install all files required to use Art Expression. You should never have to manually change your Art Expression setup. The following list of files and their uses is included in case you decide to modify your Art Expression installation for any reason:

ArtExpression	– the Art Expression program.
ArtExpression.info	– the Art Expression icon.
ArtExpressionDict1.x	– the Art Expression dictionary file. It is required for saving and printing.
ArtExpression.prefs	– this file is created when you save settings. If deleted, Art Expression will revert to its defaults.
ArtExpression.colors	– this is the default color palette which will be loaded when Art Expression is launched. If it is not present, only black and white will be available initially.
ArtExpression.fontpaths	– this file is created when you choose Save in the Font Manager requester. Only the default font and path will be present if this file is deleted.

ArtExpression.prfonts	– this file lists the fonts resident in the PostScript printer or device. It is not required for non-PostScript printers.
Help (directory)	– this drawer contains numbered help files for Art Expression's online help system. If they are deleted, online help will not be available.
Help.info	– the Help drawer icon.
AEfonts (directory)	– this drawer contains the fonts included with Art Expression.
AEfonts.info	– the AEfonts drawer icon.
AEfontpaths	– a list of the font paths available to Art Expression.
Printers (directory)	– this drawer contains alternative .prfont files for PostScript printers and devices other than the standard Apple LaserWriter Plus font set.
Printers.info	– the Printers drawer icon.
BME	– the BME program.
BME.info	– the BME icon.
Convert	– the Convert program.
Convert.info	– the Convert icon.

Art Expression will also create files named `AEfontlist` in font drawers as they are added to the font manager.

Starting Art Expression

Art Expression can be run from the Workbench or Shell. Starting Art Expression from the Workbench is the easiest way for beginners.

Art Expression will open on a custom screen if you have not previously set the defaults. Users who do not have a hard drive should boot their system from a Workbench disk prior to starting Art Expression.

If you boot using Workbench 1.3, the `Arp.library` file must be present in the `Libs:` directory of your Workbench disk for Art Expression to load.

From the Workbench



To start Art Expression from the Workbench, double click on the Art Expression program icon. All defaults are set from within the program, so there are no tool types to set before using Art Expression.

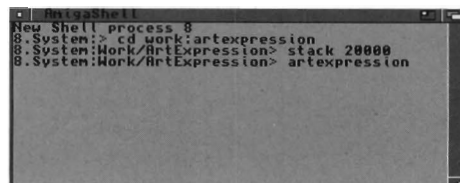
The Art Expression icon has a stack size set to 20,000 bytes. You should never have to reset the stack size. It should not be lowered because Art Expression will not function correctly with a lower stack size.

From the Shell

To start Art Expression from the CLI Shell, open a Shell window, change to the Art Expression drawer or disk with the `CD` command then type the following commands:

```
stack 20000
artexpression
```

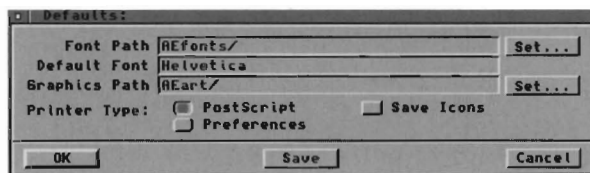
All defaults are set from within the program, so there are no CLI arguments to add when running Art Expression.



Setting Defaults



If you start Art Expression without an `ArtExpression.prefs` file present in the Art Expression directory, a requester will open to set the program defaults after the Art Expression screen appears. A default configuration file is provided so you do not need to follow these steps to start using Art Expression right away. This requester can be opened at anytime with the *Defaults...* command from the *Settings* menu.



The *Defaults* requester allows you to choose a default font and font path, and to set a default path for graphic files. It also allows you to choose whether or not to save icons with files, and whether to use the PostScript printer driver or to use the Preferences' driver.

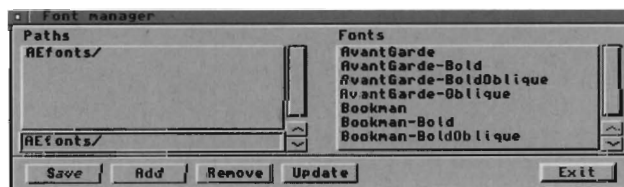
Default Font and Font Path

Art Expression allows you to store fonts anywhere on your hard drive or floppy disks. This allows you to share fonts with other applications such as PageStream. Art Expression requires a default font path and a default font so that it can load a font when it is started.

The first row of gadgets is used to select the default font to use when starting Art Expression. To choose the default font, click on the *Set...* gadget for font paths. This opens the *Font Manager* requester.



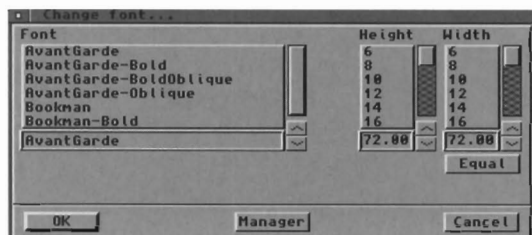
For more information on using the *Font Manager*, refer to *Managing Fonts* in Chapter 5.



The *Font Manager* allows you to add and select font paths. Add the paths you require and then click on the path in which the desired default font is stored. Choose the *Exit* gadget.

Art Expression

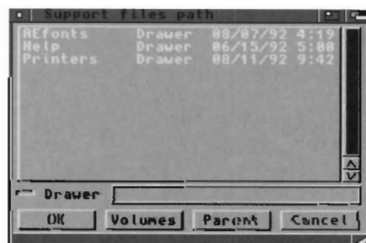
After the *Font Manager* requester is closed, the *Font* requester will appear. Choose a font from the scrolling list in the requester. It is not important to select a font size because you are only choosing a default font which will be loaded when Art Expression is started. If you need to return to the *Font Manager* to choose or add another font path, click on the *Manager* gadget. After you click on the *OK* gadget, Art Expression will load the font and then the *Font* requester will close.



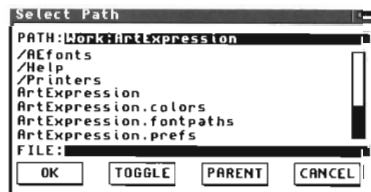
Graphics Path

The default path for graphics is used for opening and saving illustrations. The file requester will initially open to the default graphics path. While you can change directories at any time with the file requester, it is more convenient to have the requester open to your designated graphics directory.

Click on the *Set...* gadget for the graphics path. This will open the Amiga Standard Library (ASL) file path requester if you are using Workbench 2. If you are using Workbench 1.3 the Arp file requester will open.



ASL file path requester for Workbench 2



Arp file requester for Workbench 1.3

The ASL file path requester is not a normal file requester; it shows only paths, not files. Change the directory of the requester to your preferred graphics directory. The Arp requester shows both files and paths, but you need only open the requester to your graphics path.

Printer Type



For more information on using Preferences, refer to your Amiga manual.

Select the radio button gadget for the type of printer you own. If you have a PostScript printer or are printing to disk for later printing on an imagesetter, choose the *PostScript* option. If you are using any other type of printer, choose the *Preferences* option. Preferences means that Art Expression will use the selected Preferences printer driver. You must ensure that you have a Preferences driver which matches your printer.

Save Icons

The *Save Icons* checkbox gadget allows you to save your files with or without icons. The icons indicate the format in which you save or export the file.

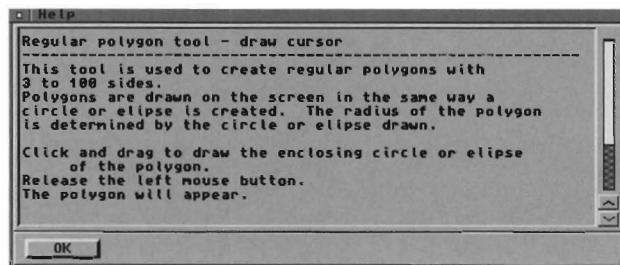


After you have made your selections in the *Defaults* requester, click on *OK* to accept the settings for this session, or *Save* to change the settings permanently. The *Save* gadget modifies the `ArtExpression.prefs` file so that your settings will be used automatically the next time you start Art Expression.

Getting Help

Online Help

Art Expression has an online help system so that you do not need to refer to the manual to refresh your memory on Art Expression's tools and requesters. Whenever a tool or requester is selected, you can press the *Help* key to open a help window for that option.



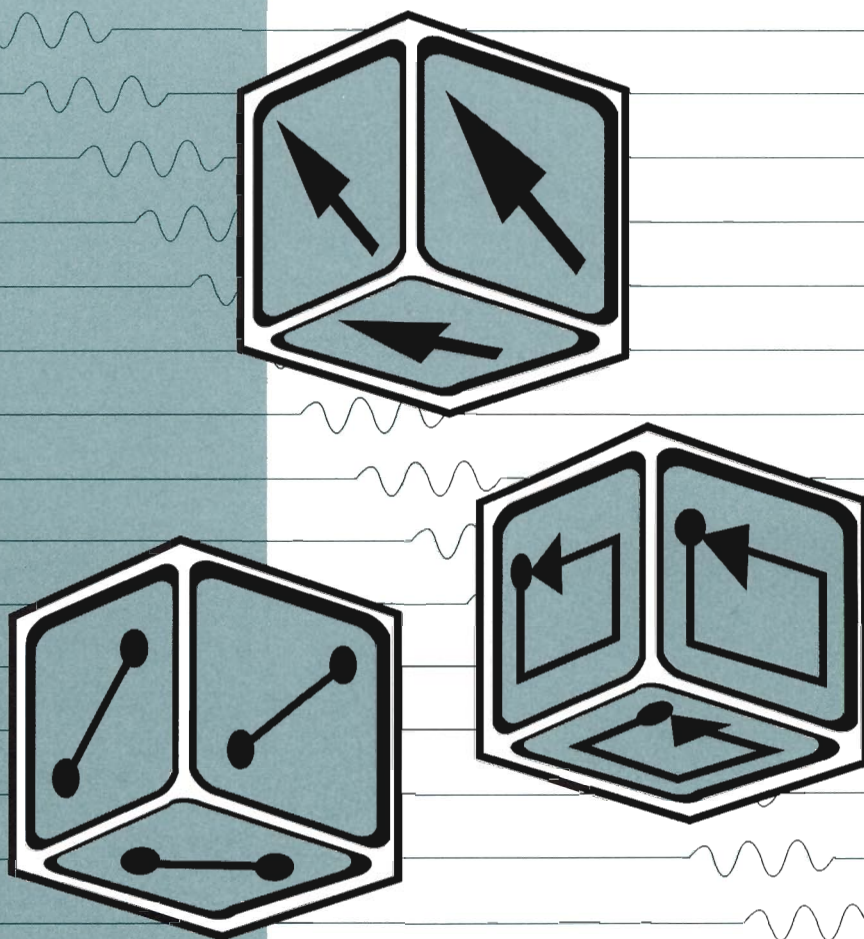
The *Help* requester explains the tool or requester and its options. If there is more text than is shown, you can use the scroll bar to see the hidden text. Click on *OK* to exit the requester and to return to Art Expression.

Technical Support

Soft-Logik Publishing provides technical support by phone, mail, fax, and on computer networks.

Telephone support (314-894-0431) is available between 9 am and 5 pm Central Time, Monday through Friday, except holidays. Mail and fax (314-894-3280) queries are answered as soon as possible.

Soft-Logik also provides support on the Soft-Logik BBS. Call 1-314-894-0057 with your modem from 1200–14400 baud, 24 hours per day. There is no charge for using the BBS. Support is also provided on GENie and CompuServe. On GENie, type SOFTLOGIK (page 385) at a prompt. On CompuServe, type GO AMIGAVEN at a prompt. The Soft-Logik forums on international computer information networks provide an opportunity to discuss similar problems and solutions with other Art Expression users.



Art Expression Basics



Chapter 1:

Art Expression Basics

What is an Illustrator?

An Illustrator is a drawing program designed for creating artistic, technical and business illustrations. These illustrations are stored as structured drawings—they are made up of lines and curves between points. They should not be confused with bitmap pictures which are a grid of on and off bits. Structured drawings can be stretched, distorted and printed at any size without loss of resolution.

Art Expression differs from a basic drawing program because it has the sophisticated tools that professionals need to create demanding illustrations. Yet, it is also easy enough for beginners to learn.

Where to Start

If you are new to drawing programs you should read this chapter after installing Art Expression. (See the *Getting Started* section for installation instructions.) After you have finished this chapter you should work through the tutorials in the *Lessons Manual*.

If you have used other drawing programs before, you should scan this section quickly because it contains information vital to using Art Expression. While all drawing programs are similar in some respects, Art Expression has many concepts which make it unique.

As you learn Art Expression, you should ensure that prompting is on. Prompting gives you brief instructions in the window title bar on how to use the selected tool. An online help system is also available for each tool and requester by pressing the *Help* key.

Basic Illustration Terms

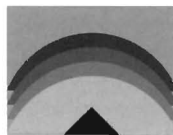
An illustration is made up entirely of *objects*. Graphic objects can be created with the *shape* and *path* tools. Text objects can be created with the *Text* tool. Text objects can be converted to graphic objects at any time for complete editing control.



Object drawn with a path tool



Object drawn with a basic shape tool



Objects drawn with various tools



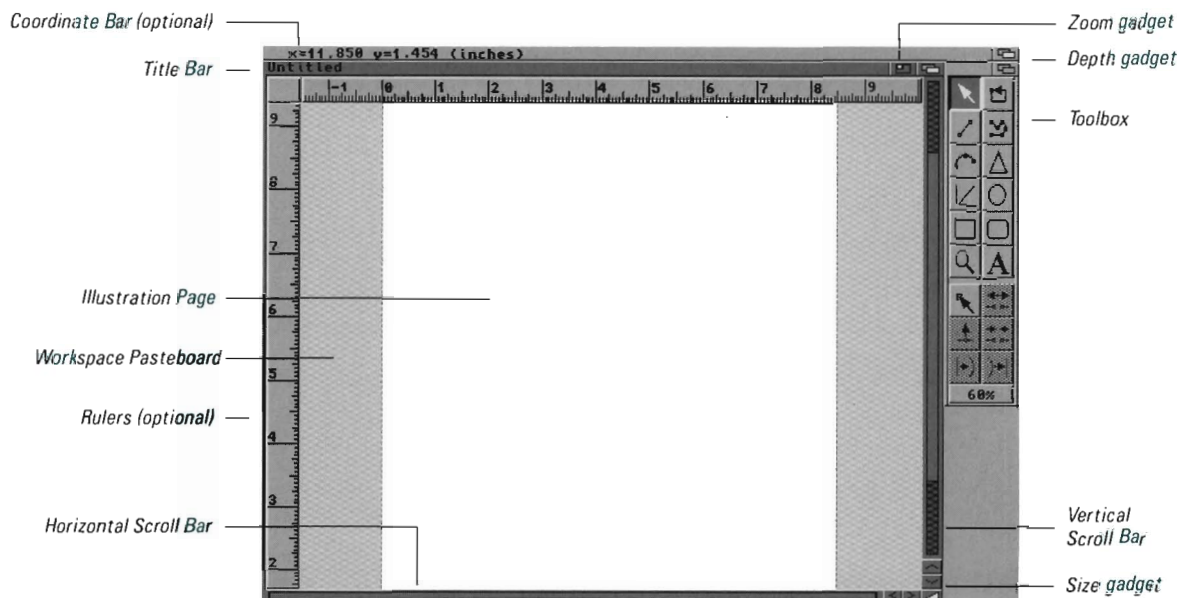
Objects created with the Text tool and then converted to graphic objects

Once objects have been created, you can manipulate them in virtually any way you can imagine. You can edit, scale, skew, rotate, flip and copy objects. You can also apply color, line and end styles to them.

Objects can also be imported from other sources. You can place (import) drawings stored in several formats. As well, the Art Expression package includes BME which can convert bitmap pictures into structured drawings that can be placed into Art Expression. Once placed in your illustration, the objects are treated as if they had been drawn in Art Expression and can be manipulated in the same manner as other objects.

The Art Expression Screen

After you start Art Expression, the Art Expression screen will appear. It is composed of an illustration window and a toolbox. If the coordinate bar is toggled on then the title bar will be obscured except for its depth gadgets.

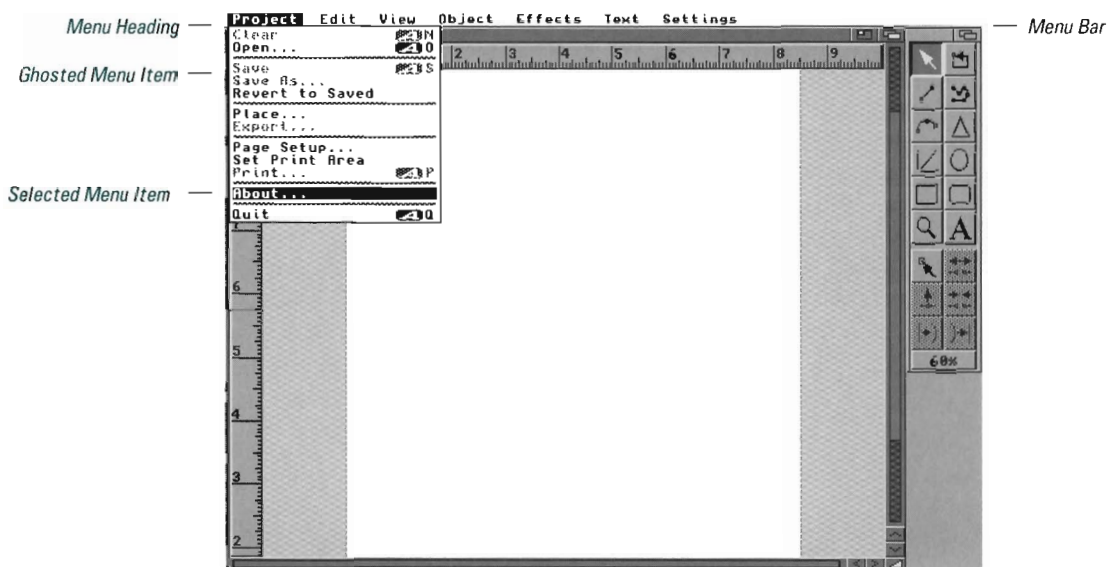


Art Expression uses standard Amiga gadgets and windows. The picture shown above demonstrates Art Expression on a Workbench 2 screen. Amiga-DOS 1.3 users will have a similar screen, however the depth gadget will be replaced by front and back gadgets and there will not be a zoom gadget.

Menus

The Art Expression menus are hidden until you hold down the right mouse button. The menu bar will appear at the very top of the screen. The menu bar contains menu headings from which you choose commands to instruct Art Expression. As you touch each of the menu headings with the mouse pointer, a dropdown menu of commands will appear. Menu items shown in solid letters can be used immediately. Commands which are ghosted out are not available in the current program mode.

One



Menu commands which have an ellipsis (*About...*) generally open requesters. Commands without ellipses do not open requesters and are executed immediately. There are exceptions to this rule because the actions of some menu commands are altered by holding down keys while selecting them.

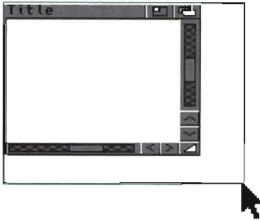
Keyboard shortcuts are available for many of Art Expression's commands. Menu commands followed by an Amiga *A* symbol and then a character can be executed by pressing the character while holding down the *Right Amiga* key. Menu commands followed by a single character can be executed by pressing the character alone.

The Illustration Window

The illustration window contains the workspace in which you create your drawings. Only one illustration may be open at once—opening another illustration will clear the existing illustration from the window. You can cut and paste objects between illustrations because they will be stored in a buffer.

The illustration window can be active or inactive. Before you can draw in a window or use the menus you must make the window active by clicking on it if it is not already active. The first mouse click in an inactive window only activates the window and does not edit or draw with the selected tool.

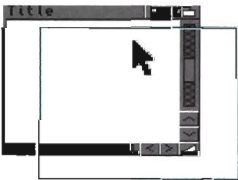
Resizing Windows



When Art Expression is first started, the illustration window will take up approximately 80% of the available display area on a standard monitor. You can adjust the window size by dragging the *Size* gadget at the lower right hand corner of the window frame with the mouse pointer. The window outline will follow the pointer as you drag the *Size* gadget. When the window is the right size, release the mouse button.

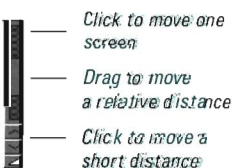
Note that the mouseform changes to an arrow pointer whenever the mouse exits the illustration window. The pointer is the standard mouseform for all operating system functions.

Moving Windows



Windows may be moved around the display area and may overlap. To move a window, drag its title bar with the left mouse button and it will follow the mouse pointer about the screen. Release the mouse button to freeze the window in its new position.

Moving Around Windows



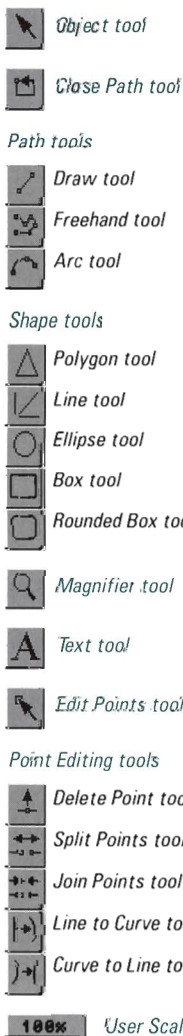
Scroll gadgets are located along the right and bottom of each window. They are used to view areas of the illustration cut off by the window edges. The vertical gadget is used to scroll the window vertically and the horizontal gadget is used for horizontal scaling. Drag a *scroll bar* to a new position to scroll the illustration a relative distance. You may also click the left mouse button in the *scroll box* to move the window one screen in that direction or click on the *scroll arrow* icons to scroll the window a short distance. The keyboard's arrow keys may be used instead of the scroll arrow icons.

The Title Bar

The title bar of the illustration window displays the name of your illustration. If you have not yet saved your work, it will be untitled. The illustration title will not be visible when prompting is on and a tool other than the *Object* tool is selected.

The Toolbox

On the right of the screen is the toolbox which contains a selection of icons, or tools, which you use to draw and modify your illustration. The toolbox has several types of tools for different purposes which are explained in later chapters of this manual.



Object Tool

The *Object* tool is used to select, move, scale and change objects. See *Chapter 3: Working with Objects*.

Close Path Tool

The *Close Path* tool is used to close open paths. See *Chapter 4: Working with Paths*.

Path Tools

The path tools are used to draw complex shapes such as irregular polygons and freehand paths. See *Chapter 2: Drawing Objects*.

Basic Shape Tools

The basic shape tools are used to draw simple geometric shapes such as lines, boxes, ellipses and polygons. See *Chapter 2: Drawing Objects*.

Magnifier Tool

The *Magnifier* tool is used to increase or decrease the view magnification. See *Changing the View Magnification* later in this chapter.

Text Tool

The *Text* tool is used to place text objects in an illustration. See *Chapter 5: Working with Text*.

Edit Points Tool

The *Edit Points* tool is used to switch to point editing mode. Objects are treated as paths instead of objects. See *Chapter 4: Working with Paths*.

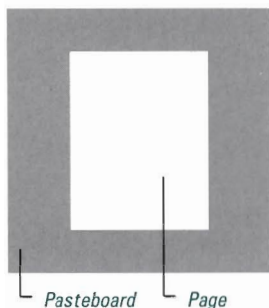
Point Editing Tools

The point editing tools are used to add, delete, join and split the points of paths, and to change segment types. See *Chapter 4: Working with Paths*.

User Scale Tool

The *User Scale* tool is used to set the view magnification for the illustration window. See the *Changing View Magnifications* section later in this chapter.

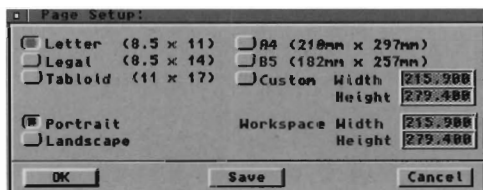
The Illustration Workspace



The illustration workspace is the area within the illustration window. You can draw anywhere in the workspace. It is made up of two parts. The page is the area on which you normally draw your illustration. The pasteboard is the area around the page on which you store objects temporarily.

Setting the Workspace Size

Art Expression automatically opens a new illustration window when you start the program. The page and workspace sizes will be set from your defaults. You can change the page and pasteboard sizes to whatever you require with the *Page Setup...* command from the *Project* menu.



The *Page Setup...* command opens a requester. You can choose from one of the preset page sizes or you enter your own in the *Custom* width and height text gadgets. You must click on the *Custom* radio button gadget to unghost the text gadgets.

If you choose one of the preset page sizes you must also choose either *Portrait* or *Landscape* orientation. Portrait pages are normal orientation, while landscape pages are rotated 90°.

The workspace size is set with the *Workspace* width and height gadgets. The workspace must be at least as large as the page size. If you set the workspace smaller than the page in either direction, Art Expression will ignore your entered value and will make the workspace equal to the page size.

Starting a New Illustration

The illustration window is always open so you must clear the workspace to start a new illustration. You can either delete all the objects on the page or choose the *Clear (A N)* command from the *Project* menu.



Viewing the Illustration

You can view the illustration at different magnifications so that you can examine the entire illustration at a glance or work on a section of the page in close detail. The amount of the illustration that you can see depends on the selected view magnification.

User Scale

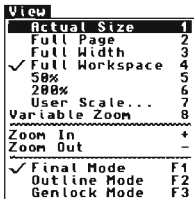


100%

The current magnification is always displayed in the *User Scale* tool in the toolbox. Choosing this tool or the *User Scale...* (7) command from the *View* menu opens a requester to enter a magnification level. You may enter any magnification level in 1% increments from 25 to 3200% of actual size.

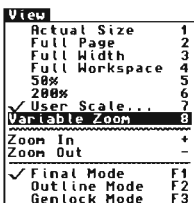


Predefined View Magnifications

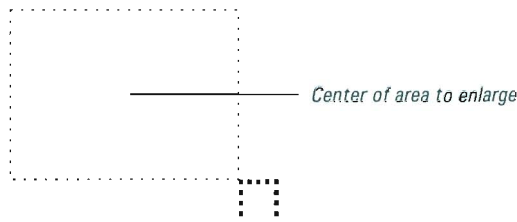


Alternatively, you can also choose from the six pre-defined magnification levels in the *View* menu. *Actual Size* (1) displays the illustration so that the scale of the objects on screen approximates how they will appear on paper. *Full Page* (2) fits the entire page into the illustration window. *Full Width* (3) fits the width of the page in the window, regardless of the height. *Full Workspace* (4) fits the entire workspace in the window. *50%* (5) and *200%* (6) are common view magnifications which are also available from the *View* menu.

Variable Zoom



The *Variable Zoom* (8) command from the *View* menu allows you to define the area to enlarge. This command changes the mouseform to a zoom pointer. Drag the pointer from the center of the area to enlarge, just as if you were drawing a box from its center. Release the mouse button to enlarge that area.



Magnifier Tool



The *Magnifier* tool is used to increase or decrease the view magnification. Selecting the *Magnifier* tool will change the mouseform to a magnifying glass with a plus sign in it. This indicates that the tool will increase the magnification. If you hold down a *Shift* key, the mouseform will change to a magnifying glass with a minus sign in it. This indicates that the tool will reduce the magnification.

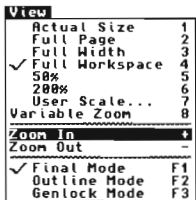
To use the *Magnifier* tool, position the center of the magnifying glass over the center of the area to magnify (or reduce). Click the left mouse button to change the magnification.



See the Drawing Preferences section later in this chapter for more information on changing the *Magnifier* tool increment.

The amount that the *Magnifier* tool changes the view magnification is set with the *Drawing Prefs...* command from the *Settings* menu. The *Mag Incr* text gadget in the *Drawing Prefs...* requester can be set from 100 to 200%. 100% does not change the view magnification and 200% doubles the magnification. If you want to change the magnification in small increments, use values of 110 to 125%. If you need to change view magnifications in large amounts, use 150 to 200%.

Zoom In / Zoom Out



The final way to change view magnifications is to use the *Zoom In* (+) and *Zoom Out* (-) menu commands. These two options double and halve the magnification, respectively. The area to be enlarged or reduced is centered at the mouse position.

Screen Redraws

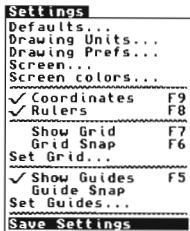
Art Expression will constantly attempt to maintain a *What-You-See-Is-What-You-Get* screen representation of your illustration. However, it is possible that the screen will not be properly redrawn after complex editing. If this situation should ever occur, a complete screen redraw can be manually forced by pressing the *Return* key or by clicking on one of the scroll bars.

You cannot interrupt a screen redraw while it is in progress. Once Art Expression has drawn the screen, control will be returned to you.

Program Settings



For more information on the *Defaults...* command, refer to the *Setting Defaults* section on page xv.



The *Settings* menu contains commands which allow you to change Art Expression in many ways to customize it to your needs. All of the *Settings* menu commands change values which are stored in the *ArtExpression.prefs* file. Art Expression loads preferences from this file when it is started.

If a *Settings* menu command opens a requester, it will have a *Save* gadget which you can use to store the settings in that requester in the *ArtExpression.prefs* file. Some of the *Settings* menu commands are toggle commands which do not open requesters. The *Save Settings* menu command saves their state, the state of all *Settings* menu requesters, the page and workspace sizes, the current view magnification, and the current *User Scale* level.

Drawing Units

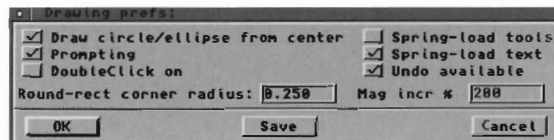
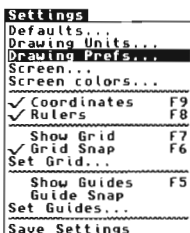
The *Drawing Units...* command opens a requester to change the measuring system. The drawing units are used for all measurements and are shown in the requesters, the rulers and the coordinate bar. You can choose from five measuring systems: inches, points, picas, centimeters and millimeters.



The *Custom* units gadget allows you to work in a custom scale. For example, if you need a 1:2 scale, where every inch on screen represents 2 inches in reality, you can set the scale to 0.5 (1/2). Select the *Custom* checkbox gadget to use a custom scale, or leave it unchecked to use the standard 1:1 scale.

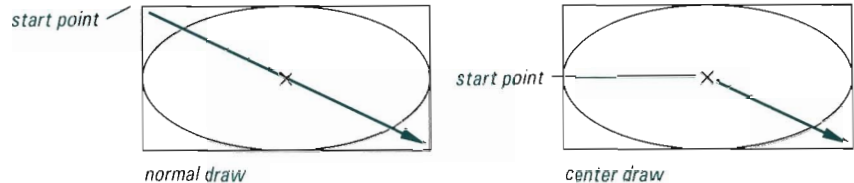
Drawing Prefs

The *Drawing Prefs...* command opens a requester to change a number of drawing preferences.



Draw Circle / Ellipse from Center

The *Draw Circle/Ellipse from Center* checkbox option allows you to draw ellipses from the corner or from the center.



Prompting

The *Prompting* checkbox option provides brief instructions in the window title bar to help you use the selected tool. If the *Object* tool is selected, the window title will be shown. Prompting is provided for all other tools which stay depressed when they are selected. It is recommended that you turn prompting on until you are familiar with Art Expression's tools.

Draw tool: press ESC or toolbox to end.

DoubleClick On

If you double click on an object when *DoubleClick On* is selected, Art Expression will open the *Edit Coordinates...* requester. This is a simple shortcut for the *Edit Coordinates...* command, but should be turned off if you tend to double click by mistake.

Spring-Load Tools

 Look for *Spring* symbols throughout the manual. These features are affected by the *Spring-Load Tools* or *Spring-Load Text* settings.

The drawing tools in the toolbox normally remain selected after you use them. For example, if you draw a square with the *Box* tool, the *Box* tool will remain selected after you finish the square so that you can draw another box. When you need to use the *Object* tool you must manually reselect it. This is the standard drawing mode for most people.

As your illustration nears completion, you may need to draw less and edit more. At this point you may want to select *Spring-Load* tools. This will automatically reselect the *Object* tool after drawing an object so that you can return to editing your illustration.

Spring-Load Text

Spring-Load Text is similar to *Spring-Load Tools* but it affects only the *Text* tool. Selecting the *Text* tool opens the *Enter Text...* requester immediately. If *Spring-Load Text* is selected, the *Object* tool will be reselected automatically after placing a text object. If *Spring-Load Text* is off, the *Enter Text...* requester will re-open to place another text object after placing the first. If you do not need to place another text object, select *Cancel* in the requester to return to the *Object* tool.

If you need to place several text objects in a row you should select *Spring-Load Text*. It should be toggled off for normal use, however, since it can be annoying to have the *Enter Text...* requester re-open after use.

Undo Available



The *Undo* command from the *Edit* menu is used to undo an action. The first time you select *Undo* after changing an object, the action will be undone. If you reselect *Undo* the action will be redone. *Undo* can only undo one level of changes, but can redo the change.

You can undo any object editing or manipulation command. You can also undo any point editing action. You cannot undo the drawing of an object, but unwanted objects can be deleted easily.

The *Undo Available* option turns the *Undo* command on and off. *Undo* requires memory to work since it must store all actions in a buffer. If you have limited memory in your computer, or are working on a large illustration, you may want to turn *Undo* off.

Rounded-Rectangle Corner Radius

The radius for the corners of round-cornered rectangles is set with the *Round-Rect Corner Radius* text gadget. This affects only future rectangles drawn with the *Rounded Box* tool.

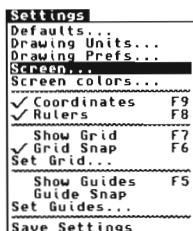
Magnification Increment

The *Mag Incr* text gadget changes the amount the *Magnifier* tool increases or reduces magnification. Acceptable values are 100 to 200%. 100% does not change magnification while 200% doubles or halves magnification.

Changing Screens

Art Expression can open on the Workbench or a custom screen. The custom screen can be high resolution interlace or high resolution non-interlace. If it is used on the Workbench screen, Art Expression will adapt to the Workbench size so that it can be used on large screen monitors.

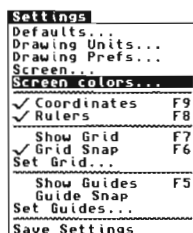
You can change the Art Expression screen at any time with the *Screen...* command from the *Settings* menu. This opens a requester to select the screen type and the number of colors. You cannot change the number of colors for Workbench screens since this number is determined by Workbench Preferences.



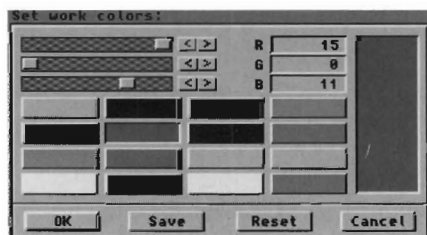
You can select 4, 8 or 16 colors on a custom screen. If you are using a Workbench screen, Art Expression will adapt to the number of available colors. The number of colors used determines the quality and speed of the Art Expression display. Screen redraws and requester drawing times are longer when more colors are used, but the visual quality will be better.

Screen Colors

The *Screen Colors...* command from the *Settings* menu is used to change the colors available to Art Expression. It can only be used with custom screens—Workbench screen colors must be changed with Workbench Preferences.



i Art Expression is designed to work in color modes from 2 to 16 colors. Version 1.0 does not support the 256 color mode of the AGA chips.



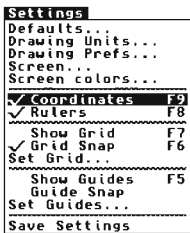
Click on a color to change. The selected color will be displayed on the right. Unavailable colors (in low color modes) will be ghosted out. Use the scroll bars to change the Red, Green and Blue (RGB) values of the screen colors.

i Changing the screen colors does not affect the printed output.

Art Expression can display thousands of apparent screen colors by dithering the available colors. It will adapt to any colors which you select. If the colors you choose are close together, you will get more accurate dithered colors in that part of the spectrum, but colors in another part of the spectrum will not be as accurate. Dithering is most effective when using the 16 color mode.

Using the Coordinate Bar

The coordinate bar is positioned at the top of the screen. It shows you the position of the mouse pointer if nothing is selected. If something is selected, it displays the left, bottom, top, right, width and height of the selected object(s).



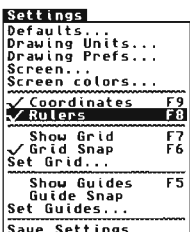
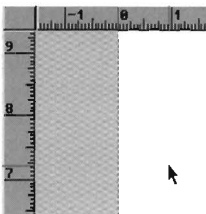
x1=-2.250 b=-0.184 r=11.663 t=10.750 w=13.913 h=10.934 (inches)

The display will also change depending on which command you have selected. While you are visually rotating an object, the coordinate bar will show the rotation angle. While skewing an object, the coordinate bar will show the vertical or horizontal skew angle. If a selected object is locked, the coordinate bar will display a padlock symbol as a reminder that you cannot change the object.

The coordinate bar can be toggled on and off with the *Coordinates* (F9) command from the *Settings* menu. Turning it off speeds up Art Expression by a small amount.

Using the Rulers

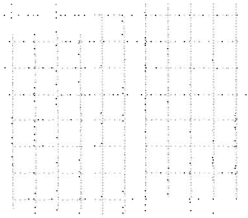
Art Expression provides rulers to make illustration easier. The rulers are placed at the left and top sides of the illustration window. The ruler origin is the lower left corner of the page. The origin is different from that used in desktop publishing but is the standard for drawing and mathematics.



The rulers are marked in the measurement units set in the *Drawing Units* requester. The increments of the rulers depend on the magnification setting, the resolution of the screen, and the custom units scale. As the mouse is moved about the workspace, hash marks will move along the rulers to show the current mouse coordinates. If an object is selected, its width and height will be reflected as hash marks in the rulers.

You can toggle the rulers on and off with the *Rulers* (F8) command from the *Settings* menu.

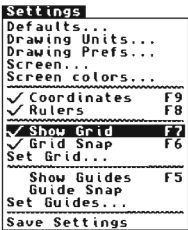
Using the Grid



The Art Expression grid is the computer equivalent of graph paper. It allows you to align objects when drawing or moving them. It can be set to a range of sizes and it will not be printed. The grid in Art Expression has two major advantages over graph paper: objects can be *snapped* to its points, and it can be turned off when necessary.

Art Expression measures the grid spacing from the ruler origin which is at the bottom left corner of the page.

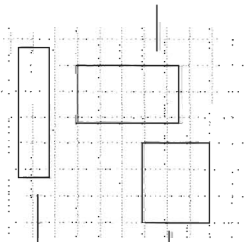
Displaying the Grid



The display of the grid can be toggled on and off with the *Show Grid* (F7) command from the *Settings* menu. Objects may still be snapped to the grid even when it is not visible. You may want to turn off the grid display to speed up screen redraws. You may also want to turn it off when the screen is cluttered or when the grid spacing is very small.

Grid Snap

Object moved
with Grid Snap



Object drawn
without Grid
Snap

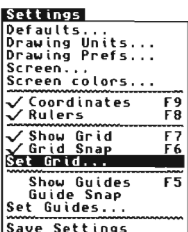
Object drawn
with Grid Snap

The *Grid Snap* (F6) command from the *Settings* menu snaps objects to the closest grid points. When *Grid Snap* is toggled off, objects will not be affected by the grid, even if it is visible.

Turning *Grid Snap* on does not affect the position of objects which are already part of the illustration. When you draw an object with *Grid Snap* on, the entire object is snapped to the grid. If you move or edit an existing object, its top left corner will be snapped to the grid.

Grid Snap also affects the *Align...* command from the *Object* menu. Unlocked objects will only be aligned to the grid when *Grid Snap* is on.

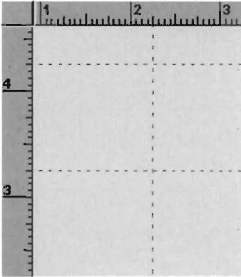
Setting the Grid



The *Set Grid...* command from the *Settings* menu is used to change the grid spacing. The requester has two text gadgets to enter the “x” and “y” spacing intervals for the grid.



Using the Guides

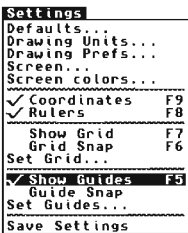


The Art Expression guides allow you to align objects to non-printing lines when moving them. Drawing is unaffected by the guides. Objects can be *snapped* to the guides and the guides can be turned off when necessary.

Art Expression measures the guide spacing from the ruler origin which is at the bottom left corner of the page.

Displaying the Guides

The display of the guides can be toggled on and off with the *Show Guides* (F5) command from the *Settings* menu. Objects may still be snapped to the guides even when they are not visible. You may want to turn off the guide display when the screen is cluttered.



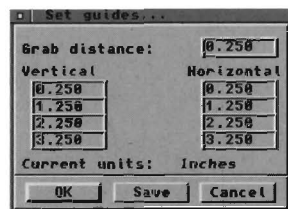
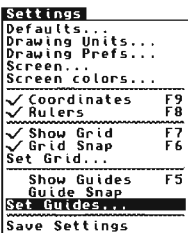
Guide Snap

The *Guide Snap* command from the *Settings* menu snaps objects to the closest guide(s) if they are within the *grab distance*. When *Guide Snap* is toggled off objects will not be affected by the guides, even if they are visible.

Turning *Guide Snap* on does not affect the position of objects which are already part of the illustration. If you move or edit an existing object, its top left corner will be snapped to the grid.

Setting the Guides

The *Set Guides...* command from the *Settings* menu is used to change the positions of the guides. The requester has text gadgets to set a maximum of five horizontal and five vertical guides. Guides are set numerically for precision control.



Opening and Placing Illustrations

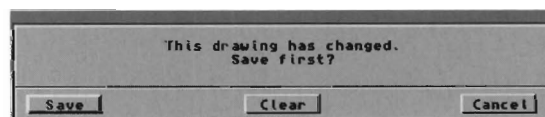
i Art Expression is compatible with Adobe Illustrator up to Illustrator 88. Illustrator 3.0 files cannot be opened.

You can open a saved Art Expression illustration or an Adobe Illustrator illustration after starting the program. Only Art Expression and Adobe Illustrator EPS files may be opened and only one illustration may be open at once. If there is already work in the illustration window, it will be erased when you open an illustration.

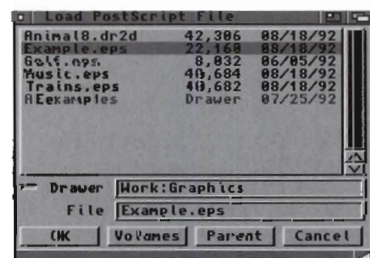
If you want to combine illustrations, you can cut and paste between them or you can place one illustration into another. The illustration to be placed should be saved from Art Expression before being placed. You can also place graphics created in other programs.

Opening an Art Expression Illustration

To open an illustration, start Art Expression and then choose the *Open...* (A O) command from the *Project* menu. If there is unsaved work in the illustration window, Art Expression will ask you if you want to save the illustration, clear the workspace or cancel the operation.



If you are using Workbench 2 or higher the Amiga Standard Library (ASL) open file requester will open to select the illustration filename. If you are using Workbench 1.3, the Arp file requester will open.



ASL open file requester for Workbench 2



Arp file requester for Workbench 1.3

Choose the illustration to open from the file requester and click on the *OK* gadget. Art Expression will open the illustration and display it in the illustration window. The name of the illustration will be put in the window title bar.

Art Expression saves its illustrations in Encapsulated PostScript (EPS) format. Art Expression and Adobe Illustrator EPS files can be opened with the *Open...* command, but other types of EPS must be imported with the *Place...* command.

The steps to open an illustration are:

1. Choose the *Open...* command from the *Project* menu.

A requester will ask you to save your work, clear the workspace, or cancel the operation, if there is unsaved work in the workspace.

2. Select the file to open.

A file requester will open to select the file to open. Select an Art Expression or Adobe Illustrator EPS file and click on *OK*.



Reverting to Saved

If you wish to revert to your last saved version of your illustration, you can use the *Revert to Saved* command from the *Project* menu. This re-opens the file but you do not have to reselect the file to open.

Placing Graphics

You can place graphics into your illustration that were exported from Art Expression or saved from another program compatible with the standards supported by Art Expression.

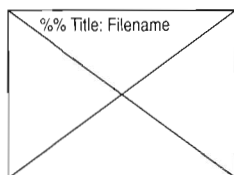
Art Expression can place Encapsulated PostScript (EPS), IFF DR2D and Aegis Draw illustrations. If you place a file which contains text objects, Art Expression will use the correct fonts if available. If you do not have the correct fonts installed, Art Expression will substitute your default font.

Encapsulated PostScript (EPS or EPSF)

Encapsulated PostScript (EPS) is a format created by Adobe Systems, Inc., to describe illustrations for the PostScript page description language used in PostScript printers. EPS illustrations are not normally decipherable without a PostScript interpreter in the operating system such as Display PostScript.

i Art Expression is compatible with Adobe Illustrator up to Illustrator 88. Illustrator 3.0 files cannot be placed.

i Text objects in Adobe Illustrator EPS files which are not converted to graphics will not be placed in the illustration window.



Placed EPS file in unknown format.



Art Expression can place its own exported EPS files. It can also place illustrations saved in Adobe Illustrator's format. Adobe Illustrator EPS is a widely used version of EPS because it is well-documented. Many programs can save or export graphics in this format including Adobe Illustrator, Corel Draw, Windows Draw and Professional Draw for Windows.

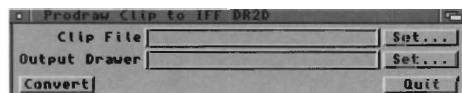
Encapsulated PostScript files created by other programs such as Aldus Free-hand cannot be interpreted when placed because they are not in an easily decipherable format. If you place an EPS file in an incompatible format, it will be placed as a box with a cross on it to indicate that it is an EPS block. It can only be printed to a PostScript printer.

Interchange File Format Drawing Two Dimensional (IFF DR2D)

IFF DR2D is the Amiga standard for structured drawings. Programs such as ProVector and Sign Engine use DR2D. Since DR2D is now the Amiga standard, additional programs will support it in the future.

Professional Draw Clip

Gold Disk's Professional Draw program uses a proprietary format which cannot be placed into Art Expression directly. A utility is included with Art Expression to convert Professional Draw Clip format to IFF DR2D. Double click on the Convert program icon to open its requester.



Click on the top *Set...* gadget to open a file requester to select a file to convert. Alternatively, enter a complete filename with its path to convert in the top text gadget. Click on the bottom *Set...* gadget to set an output path. The Convert program will create separate files for each clip in the Professional Draw Clip file and will append the clip name plus DR2D to the original filename.

i.e., The file `Objects` contains two clips, `Box` and `Circle`. Convert will create two files called `Objects.Box.DR2D` and `Objects.Circle.DR2D`.

All Professional Draw options are translated in the conversion except gradient fills and dashed lines which are not compatible with Art Expression.

Aegis Draw

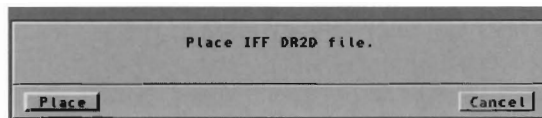
Aegis Draw is one of the oldest Amiga formats which is no longer widely used. Art Expression can place standard Aegis Draw format files.

Placing



To place a graphic into your illustration, choose the *Place...* command from the *Project* menu. If you are using Workbench 2 or higher the Amiga Standard Library (ASL) open file requester will open to select the graphic to place. If you are using Workbench 1.3 the Arp file requester will open.

Choose the graphic to place from the file requester and click on the *OK* gadget. Art Expression will load the graphic and then open a requester to confirm you want to place the graphic. The requester will list the format type of the graphic.



After you click on *Place* in the requester, the mouseform will change to a picture frame shape to help you position the graphic in the illustration. This is similar to pasting down a copy of an object.

You can place the graphic at its original size by clicking anywhere in the illustration window with the mouse. Alternatively, you can place the graphic at a different size by dragging the mouse while pasting. Drag the mouse to define the size of the graphic. Release the mouse button when you are done and the graphic will be scaled to the desired size.

Hold down a *Shift* key to retain the original aspect ratio of the graphic while resizing.

The steps to place a graphic are:

- 1. Choose the Place... command from the Project menu.**
A file requester will open to select the file to place. Select a file and click on *OK*.
- 2. Select the file to place.**
A file requester will open to select the file to place. Select an IFF DR2D, Art Expression EPS, Adobe Illustrator EPS or Aegis Draw file and click on *OK*. You can also place other forms of EPS graphics but they cannot be edited in Art Expression.
- 3. Confirm that you want to place the graphic.**
A requester will open to confirm placing the graphic. Click on the *Place* gadget.
- 4. Place the graphic.**
The mouseform will change the a picture frame shape. Position it in the illustration and click to place the graphic. The top left corner of the graphic will be at the position where you click or start to drag.

Saving and Exporting Illustrations

i You should save often to prevent data loss in the case of electrical, hardware or software difficulties. You may want to save a second copy of your illustration with a different filename at major points in your work in case you need to revert to a previous level of your illustration.

 Refer to *Changing Text to Graphics* in Chapter 5 for more information on converting text objects.

You can save an Art Expression illustration after you have drawn or placed something in the illustration window. Saving prevents the loss of your illustration in the event of a power failure or other problem, and allows you to continue working on it at another time.

You can also export graphics from Art Expression in several formats. This allows you to use Art Expression illustrations in programs which cannot directly read the Art Expression EPS format.

Font Considerations

You may want to convert text objects to graphic objects before you save your illustration. If you intend on reloading your illustration into Art Expression for further work, and the fonts you used in your illustration will still be available at that time, then you can leave the text as text objects. However, if you plan on loading your illustration into another program or giving it to someone else who may not have the required fonts, you should convert the text objects to graphic objects.

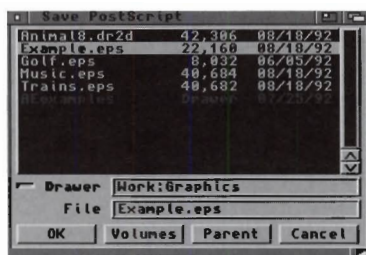
You do not need to convert your text to graphics if the illustration will be used in a program that has access to the same font used in Art Expression. For example, you can share PostScript fonts between Art Expression and PageStream, so you could load an Art Expression illustration into PageStream if PageStream had the same fonts listed in its *Font Manager*.

Saving an Art Expression Illustration

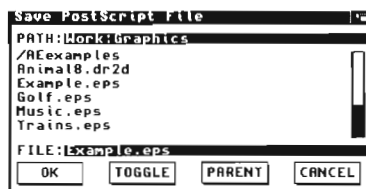
There are two commands in the *Project* menu to save your work: *Save As...* and *Save*. The *Save As...* command is used to save a new illustration for the first time, or to save an existing illustration under another name or in another directory. The *Save* command is used to save an illustration with the name with which it has been previously saved.

To save an untitled illustration choose the *Save As...* or *Save (A S)* command from the *Project* menu. If you are using Workbench 2 or higher the Amiga Standard Library (ASL) save file requester will open to enter an illustration filename for the illustration. If you are using Workbench 1.3 the Arp file requester will open.



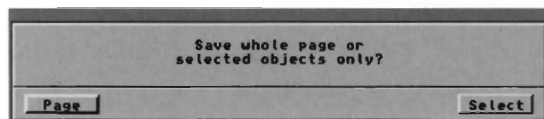


ASL save file requester for Workbench 2



Arp file requester for Workbench 1.3

Enter the illustration name and choose a directory in which to store the illustration, then click on the *OK* gadget. If any objects are selected, another requester will open to let you choose between saving all the objects in the illustration window or only the selected objects. Saving selected objects only allows you to save only a portion of your illustration.



i Art Expression saves EPS files without bitmap previews.

Art Expression saves its illustrations in Encapsulated PostScript (EPS) format. Art Expression EPS files can be opened with the *Open...* command. Any PostScript compatible application should be able to import an Art Expression illustration and print it to a PostScript printer or imagesetter.

The steps to save an illustration are:

1. Choose the Save As... command from the Project menu.

2. Select what to save.

A requester will open if any objects are selected to choose between saving all objects in the illustration or selected objects only.

3. Select the file to save.

A file requester will open to select the file to save. Choose a filename and directory and click on *OK*.



Refer to *Placing Graphics* for more information on file types.

Exporting Graphics

You can export all or part of your illustration as a graphic file in your choice of three file formats: Adobe Illustrator 88 EPS, IFF DR2D, and IFF ILBM. IFF DR2D is the standard Amiga structured drawing format. It is the best format to use if you do not have a PostScript printer.

Adobe Illustrator 88 EPS is a common Mac and PC format for exchanging graphics, and has the advantage of being imported into PageStream as objects. You can also export as IFF ILBM.

Adobe Illustrator 88 EPS

Adobe Illustrator 88 EPS format does not support composite paths. Merged objects will be split into separate objects when exported.

Interchange File Format Drawing Two Dimensional (IFF DR2D)

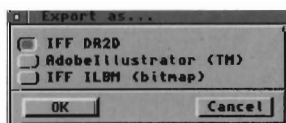
IFF DR2D does not support percentage fills at this time. Percentages of colors will be changed to new, unnamed colors when exported. This will only be a problem if you plan to mechanically separate the IFF DR2D file from another program or if there are too many colors in the drawing. (Some programs have limits on the number of colors allowed.)

Interchange File Format Interleaved Bitmap (IFF ILBM)

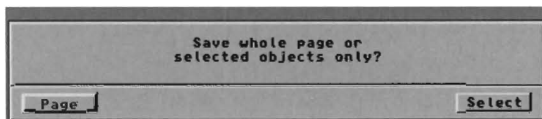
IFF ILBM is a bitmap picture format, not a structured drawing format. A bitmap representation of the drawing is created. It can be edited in a paint program but the exported file cannot be edited in Art Expression.

Exporting

To export a graphic from your illustration, choose the *Export...* command from the *Project* menu. A requester will open to select the export file format.



If any objects are selected, another requester will open to let you choose between exporting all the objects in the illustration window or only the selected objects. Exporting selected objects only allows you to export only a portion of your illustration.



If you are using Workbench 2 or higher, the Amiga Standard Library (ASL) save file requester will open to select the file to export. If you are using Workbench 1.3, the Arp file requester will open. Enter the graphic name and choose a directory in which to store it.

The steps to export a graphic are:

- 1. Choose the Export... command from the Project menu.**
- 2. Select the export format.**
A requester will open to choose between exporting as Adobe Illustrator EPS, IFF DR2D and IFF ILBM.
- 3. Select what to export.**
A requester will open if any objects are selected to choose between exporting all objects in the illustration or selected objects only.
- 4. Select the file to export.**
A file requester will open to select the file to export. Choose a filename and directory and click on *OK*.

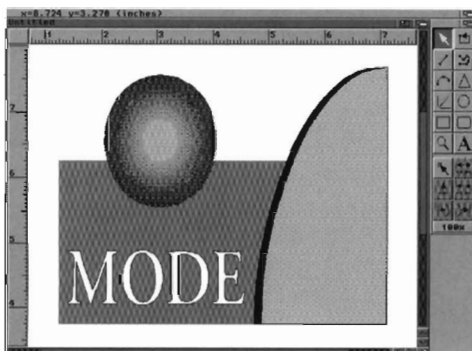
Display Options

Art Expression maintains an accurate screen representation of your illustration at all times. The display can be changed to increase the speed at which Art Expression redraws the screen. You can increase the screen redraw speed by changing the display mode and by showing complex objects as boxes.

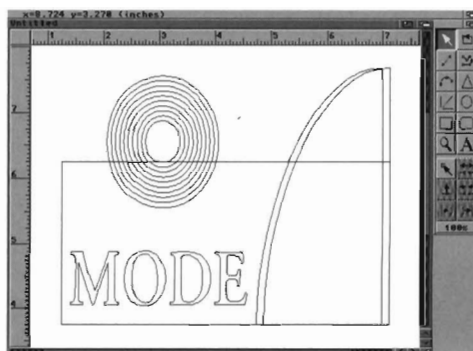


Display Modes

The *Final Mode* and *Outline Mode* commands from the *View* menu toggle between a WYSIWYG (What-You-See-Is-What-You-Get) and a non-WYSIWYG display. In final mode, all objects will appear exactly as they will be printed. In outline mode, the path of each object will be displayed without fills, line styles or colors.



Final Mode: objects are shown filled and colored



Outline Mode: objects are shown as outlines only

Each mode has its advantages:

i You can draw and edit objects in both final and outline modes. There is no difference between editing other than the advantages listed here.

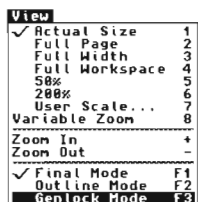
Final Mode

- WYSIWYG display
- easier to discern the stack order of objects

Outline Mode

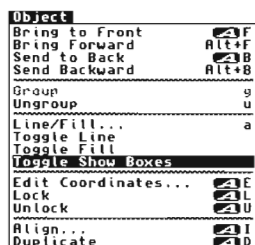
- faster display
- easier to see and select objects hidden behind other objects
- able to see objects stacked on top of other objects which are the same color

Genlock Mode



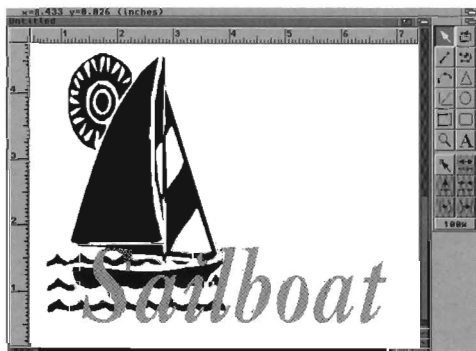
Art Expression also has a genlock mode which allows you to manually trace over video images. Genlock mode changes the background color of the illustration window to the screen color. The genlock source should be a still image if you are to successfully trace the picture. A genlock device must be attached to your Amiga to use this mode. SuperGen from Digital Creations has been tested with Art Expression and is recommended.

Show Objects as Boxes

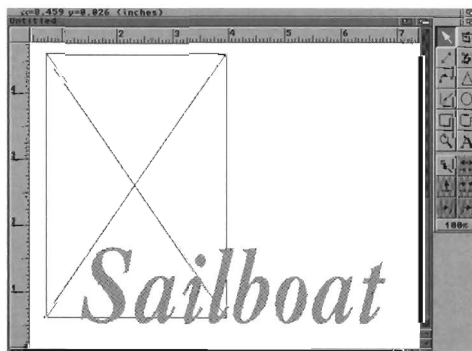


Displaying complex objects can slow down Art Expression redraws. Changing to outline mode is one solution, but it might not be possible given your drawing needs. Even in outline mode, redraws of complex traces and free-hand paths can take too much time if the screen is being redrawn often. You can display selected objects as boxes with the *Toggle Show Boxes* command from the *Object* menu. This allows you to turn off the display of objects which you do not need to see.

Toggle Show Boxes displays selected objects as boxes with crosses on them. Selecting the command when objects shown as boxes are selected will redraw them normally.



The traced sailboat redraws slowly



Select the sailboat and select *Toggle Show Boxes*

You can manipulate an object shown as a box, just as you could when it was shown normally. Showing objects as boxes is similar to showing text as boxes with the *Text* menu's *Toggle Show Boxes* command. The *Object* menu's command is intended for objects other than text, while the *Text* menu's command is intended for text objects.

Using with Other Software

Art Expression is compatible with any Amiga program which adheres to the Amiga structured drawing format standard. Compatibility with selected programs is shown below:

PageStream

Save or Export To:

Art Expression EPS:

- Cannot be edited or viewed in PageStream.
- Requires a PostScript printer.

Adobe Illustrator 88 EPS:

- Can be edited and viewed in PageStream.
- Does not require a PostScript printer.

IFF DR2D:

- Can be edited and viewed in PageStream.
- Does not require a PostScript printer.

ProVector

Save or Export To:

Art Expression EPS:

- Requires the PSImport module to be edited and viewed in ProVector.
- Requires a PostScript printer.

IFF DR2D:

- Can be edited and viewed in ProVector.
- Does not require a PostScript printer.

Place From:

IFF DR2D:

- Can be edited and viewed in Art Expression.
- Does not require a PostScript printer.

Sign Engine

Export To:

IFF DR2D:

- Can be placed in Sign Engine.

Place From:

IFF DR2D:

- Can be edited and viewed in Art Expression.
- Does not require a PostScript printer.

Professional Page

Save or Export To:

Art Expression EPS or Adobe Illustrator 88 EPS:

- Cannot be edited or viewed in Professional Page.
- Requires a PostScript printer.

Professional Draw

Save or Export To:

Art Expression EPS or Adobe Illustrator 88 EPS:

- Cannot be edited or viewed in Professional Draw.
- Requires a PostScript printer.

Place From:

Professional Draw Clip:

- Can be converted to IFF DR2D with Convert, then imported, edited and viewed in Art Expression.
- Does not require a PostScript printer.

Saxon Publisher

Export To:

Art Expression EPS or Adobe Illustrator 88 EPS:

- Cannot be edited or viewed in Saxon Publisher.
- Requires a PostScript printer.

IFF DR2D:

- Can be edited and viewed in Saxon Publisher.
- Does not require a PostScript printer.

Expert Draw

Import From:

Professional Draw Clip:

- Can be converted to IFF DR2D with Convert, then imported, edited and viewed in Art Expression.
- Does not require a PostScript printer.

Deluxe Paint, BME and other paint programs

Export To:

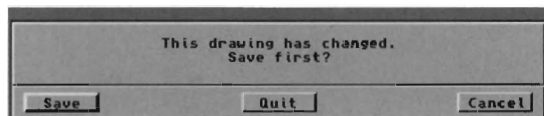
IFF ILBM:

- Can be edited and viewed in any IFF ILBM compatible paint program.

Quitting Art Expression



When you have completed your illustration, you can exit Art Expression by choosing the *Quit* (A Q) command from the *Project* menu. If you have not saved your work before choosing *Quit*, Art Expression will ask you whether you wish to save your work first, to quit without saving, or to cancel the operation.



If you want to close the current illustration to work on another, you do not need to quit. Choose the *Open...* command to load another illustration or the *Clear* command to clear the workspace.





Drawing Objects



Chapter 2:

Drawing Objects



Art Expression has two types of drawing tools: *shape* tools and *path* tools. The shape tools are used to draw basic geometric shapes such as lines, boxes, ellipses and regular polygons. They provide a quick method to create commonly used shapes. Their functions can be duplicated with the path tools, although not as easily. The path tools allow you to create complex shapes such as irregular polygons and freehand lines, or any shape you choose.



Shape tools

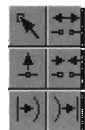


Path tools

Once a shape or path is drawn, it is an *object*, regardless of whether it was drawn with a shape or a path tool. Objects may be assigned fill, line and color attributes, or can be rotated, moved, flipped, skewed and transformed. Objects can be resized horizontally or vertically, but cannot be reshaped with the standard *Object* tool.



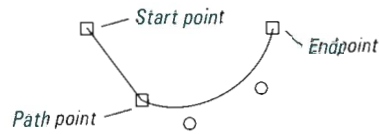
Objects are composed of *paths*. An object normally has one path unless its path has been merged with that of another object. Paths may be edited with the *Edit Points* tool and the other point editing tools to reshape the object.



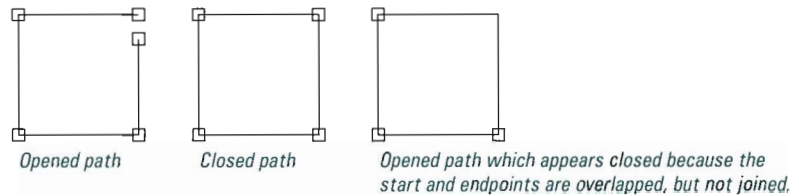
Point editing tools

Two

A path is made up of any number of *segments* which are defined and separated by *path points*. The first point is the *startpoint* and the last point is the *endpoint*. Path segments may be straight or curved.



Paths can be opened or closed. Opened paths have start and endpoints which are not joined. Closed paths have start and endpoints which are joined together. The basic shape tools always draw closed paths. The paths tools draw open paths unless closed with the *Close Paths* tool.



The concept of paths is fundamental to using Art Expression. It is important to understand that objects are drawn with the shape and path tools, edited with the *Object* tool, and reshaped with the point editing tools.

Drawing Basic Shapes

i The mouseform normally used in Art Expression is an *arrow pointer*. It will change to a *drawing crosshair* when any drawing tool is selected.



e If you have *Spring-load tools* selected from the *Drawing Prefs* requester, the *Object* tool will be reselected automatically so that you can modify the shape. If *Spring-load tools* is not selected, the tool will remain selected for drawing another shape.

b For more information on *Drawing Prefs*, refer to *Chapter 1: Art Expression Basics*.



Art Expression has five basic shape tools. They are the *Regular Polygon*, *Line*, *Ellipse*, *Box* and *Rounded Box* tools. The drawing technique is the same for all five, irrespective of which tool you select.

The steps to draw a basic shape are:

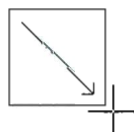
- 1. Select a basic shape tool.**
Choose the *Regular Polygon*, *Line*, *Ellipse*, *Box* or *Rounded Box* tool. The pointer will change to a drawing crosshair.
- 2. Position the mouse crosshair. Drag the mouse to draw the shape.**
Hold down the left mouse button and drag the mouse. The shape will be drawn from the point at which you start dragging the mouse.
- 3. Release the mouse button.**
The shape will be created after you release the mouse button.



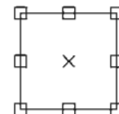
Select a shape tool.



Position the crosshair.



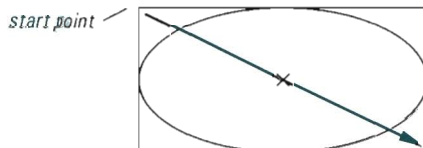
Drag the mouse diagonally.



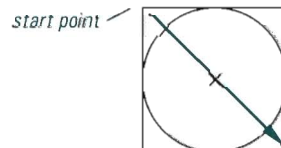
Release the mouse button.

You can constrain the aspect ratio of basic shapes by holding down a *Shift* key while drawing. With constrained drawing, boxes will be constrained to squares, ellipses will be constrained to circles, and regular polygons will be constrained to equilateral shapes.

i You do not need to draw down to the right as shown here. You can start from any corner of a shape and draw in any direction.

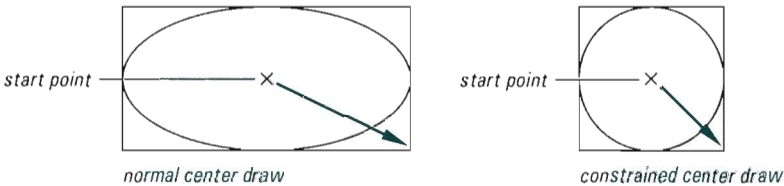


normal draw



constrained draw

If the *Draw Circle/Ellipse from Center* option is selected in the *Drawing Prefs* requester, ellipses, circles and regular polygons will be drawn from the center instead of from a corner.



All basic shapes are actually paths of connected lines and/or curves which are treated as a shape by the *Object* tool. They can be edited with the point editing tools when the *Edit Points* tool is selected.

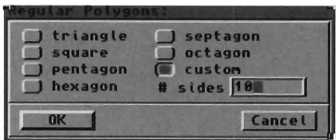
 For more information on changing object attributes, refer to *Chapter 3: Working with Objects*.

Shapes will take on the attributes which are set at the time the shape is drawn. Attributes such as line and fill style and color can be changed at any time by selecting the shape with the *Object* tool and choosing the appropriate menu command.

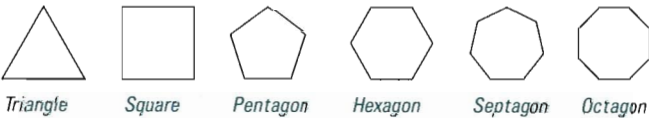
Regular Polygon Tool



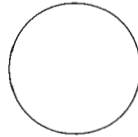
The *Regular Polygon* tool is used to draw objects with 3 or more sides. The tool defaults to triangles, but other shapes can be specified with the *Regular Polygon* requester.



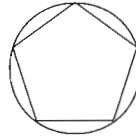
This requester is opened by clicking on the *Regular Polygon* tool in the tool-box while holding down a *Shift* key. You can select from the six predefined polygon shapes, or specify a custom number of sides.



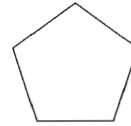
When constrained by a *Shift* key, you can draw equilateral polygons with the *Regular Polygon* tool. Polygons are drawn in the same way as other basic shapes, but an ellipse tangent to all of the polygon's vertices will be displayed to approximate the size of the polygon. The polygon will be drawn after you release the mouse button.



What you see
as you draw.



The polygon will
fit inside the ellipse.



After releasing the mouse button,
the polygon will be drawn.

Line Tool



The *Line* tool is used to draw horizontal, vertical and 45° lines. It is not affected by the *Shift* key. If you drag the mouse horizontally after starting a line, the *Line* tool will draw a horizontal line. If you drag the mouse vertically, the *Line* tool will draw a vertical line. Similarly, if you move the mouse diagonally after starting a line, the line will be aligned 45° to the horizontal and vertical axes.

Box Tool



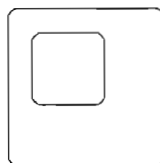
The *Box* tool is used to draw rectangular boxes. When constrained by a *Shift* key, it will create squares. Boxes are paths of four connected line segments.

Rounded Box Tool

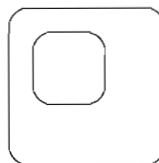


The *Rounded Box* tool is used to draw rectangular boxes with rounded corners. When constrained by a *Shift* key, it will create round-cornered squares. Rounded boxes are paths of four line segments connected to Bézier curve segments at the corners.

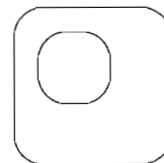
i The radius of the corners can be set with *Drawing Prefs*. The radius setting will affect only rounded boxes drawn after the setting is changed.



Corner radius = 0.05"



Corner radius = 0.10"



Corner radius = 0.15"

Ellipse Tool



The *Ellipse* tool is used to draw ellipses. When constrained by a *Shift* key, it will create circles. Ellipses are paths of four connected Bézier curve segments.

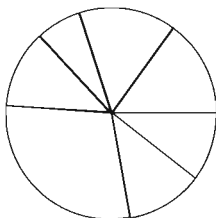
Pie Charts

The *Ellipse* tool can also be used to create pie charts. The *Pie Slice* requester is opened by clicking on the *Ellipse* tool in the toolbox while holding down a *Shift* key.

Pie slice percentages:			
1 %	H5	7 %	10
2 %	H5	8 %	
3 %	7	9 %	
4 %	H2	10 %	
5 %	29	11 %	
6 %	H2	12 %	
Total %		100	
OK		Cancel	

The requester allows you to create an elliptical or circular pie chart with up to 10 slices of any size. Enter the segment size in percent into the slice text gadgets. The *Total* gadget will tell you the total size of the pie chart after you press *Return* in a text gadget to enter a value. Most pie charts have a total size of 100%, but smaller ones are sometimes created to leave missing slices.

After entering the values and clicking on the *OK* gadget, the requester will close and the mouseform will change to a picture frame pointer to paste the pie chart into the illustration. Position the mouse at the top left corner of the area in which to paste the pie chart. Drag down to the right to define the pie chart's size. Hold down a *Shift* key while dragging to create a circular pie chart. Each slice will be composed of two line segments and one or more Bézier curve segments.



*Pie chart created with
Pie Slice requester.*

Drawing Paths



Art Expression has three path tools. They are the *Draw*, *Freehand* and *Arc* tools. The path tools allow you to create complex shapes not provided by the basic shape tools. They can also be used to create open paths and to extend the paths created by the basic shape tools.

Path tools can be used alone or together. The three tools use different drawing techniques but create similar end results. You can switch tools at any time and continue with another.

It is not essential that you create a perfect drawing on your first attempt. Use the path tools to sketch out your ideas. You can add, delete, move, join and split points later. You can also switch lines to curves and vice versa.

Draw Tool



The *Draw* tool is the primary path tool and is the one you will use most often. It is used to draw straight and curved path segments. To use the *Draw* tool, select it from the toolbox and click on the screen to define the startpoint. Then move the mouse and click elsewhere to create a path point for a straight segment. Drag the mouse when creating a path point to define a curve segment. Press the *Esc* key or select the *Object* tool to end the path.

The steps to draw a path with the Draw tool are:

1. **Select the Draw tool.**
The mouseform will change to a drawing crosshair.
2. **Position the mouse crosshair. Click the left mouse button.**
Click the left mouse button to start a path. (Do not drag the mouse.) A line will be drawn from the point at which you clicked.
3. **Click to define a path point.**
Click again elsewhere to define a path point and to draw the first line segment. Drag the mouse instead of clicking to define a curve segment. When you release the mouse button, a curve segment will be drawn in the shape you defined.
4. **Click to define another path point.**
Continue defining path segments as required. You can also change to another path tool to continue the path.



You can draw connected segments only if *Spring-load tools* is not selected in the *Drawing Prefs* requester. If *Spring-load tools* is selected, the *Object* tool will reselect after each segment, forcing you to reselect the *Draw* tool to continue the path.

5. End the path.

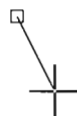
Press the *Esc* key or select the *Object* tool to end a path.



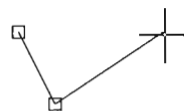
Select the *Draw* tool.



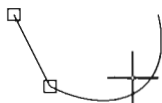
Position the crosshair. Click the mouse button to start the path.



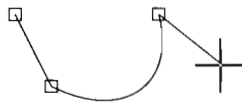
Move the mouse to define the first segment.



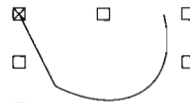
Click to end a line segment. Move to the next point.



Drag from the next point to define a curve segment.



Release the mouse button to end a curve segment. Move to the next point.



Press *Esc* or select the *Object* tool to end the path without creating another segment.

Arc Tool

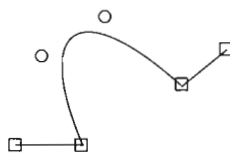


The *Arc* tool provides an alternate way to draw paths. Like the *Draw* tool, it is used to draw straight and curved path segments. To use the *Arc* tool, select it from the toolbox and click on the screen to define the startpoint. Then move the mouse and click elsewhere to create a path point for a straight segment. Drag the mouse when creating a path point to define an arc. Press the *Esc* key or select the *Object* tool to end the path.

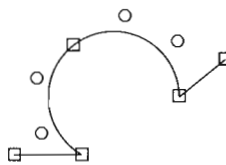
Arcs created by the *Arc* tool are similar to curves created by the *Draw* tool. Arcs are made up of one to four Bézier curve segments which define part of a circle. The curve handles are placed so that the arc is circular.



Point and curve handles only appear when the *Edit Points* tool is selected. For more information on point and curve handles, refer to *Chapter 4: Working with Paths*.



Curve segment created with *Draw* tool



Arc segment created with *Arc* tool

The steps to draw a path with the Arc tool are:

1. Select the Arc tool.

The mouseform will change to a drawing crosshair.

2. Position the mouse crosshair. Click the left mouse button.

Click the left mouse button to start a path. (Do not drag the mouse.) A line will be drawn from the point at which you clicked.

3. Click to define a path point.

Click again elsewhere to define a path point and to draw the first line segment. Drag the mouse instead of clicking to draw an arc. When you release the mouse button, one to four Bézier curves will be drawn in the shape you defined.

4. Click to define another path point.

Continue defining path segments as required. You can also change to another path tool to continue the path.

5. End the path.

Press the *Esc* key or select the *Object* tool to end a path.



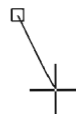
You can draw connected segments only if *Spring-load tools* is not selected in the *Drawing Prefs* requester. If *Spring-load tools* is selected, the *Object* tool will reselect after each segment, forcing you to reselect the *Arc* tool to continue the path.



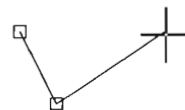
Select the
Arc tool.



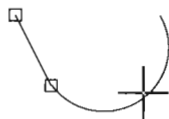
Position the crosshair.
Click the mouse button
to start the path.



Move the mouse
to define the first
segment.



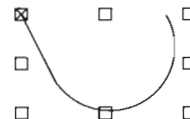
Click to end a line
segment. Move to
the next point.



Drag from the next
point to define an arc.



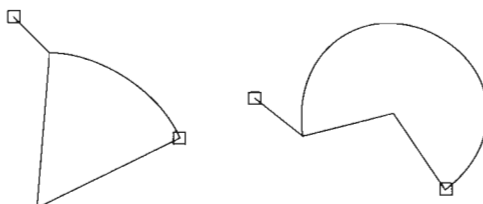
Release the mouse button
to end an arc.



Press *Esc* or select the *Object*
tool to end the path without
creating another segment.

Slice Segments

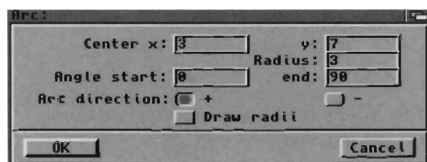
The *Arc* tool can be used to draw pie slice segments. While drawing an arc segment, hold down a *Shift* key and two lines will connect the ends of the arc to its center to form a pie slice. Depending on which side of the arc the mouse is positioned, you will see either a pie slice or the remainder of the pie. Position the mouse to create the type and size of slice you need, then release the mouse to end the slice segment.



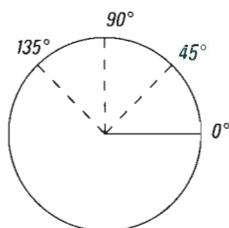
Slice segments created with the Arc tool and the Shift key

Defined Arcs

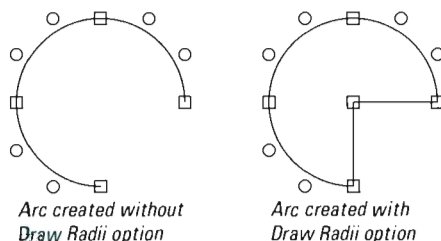
The *Arc* tool can also be used to draw separate arc shapes. The *Arc* requester is opened by clicking on the *Arc* tool in the toolbox while holding down a *Shift* key.



The requester allows you to create a circular arc with a given radius around a given center. After creating the arc, it will be composed of one to four Bézier curve segments. Enter the arc's center and radius coordinates into the *Center X*, *Y* and *Radius* text gadgets. The start and end angles of the arc, measured from 3 o'clock, should be entered in the *Angle Start* and *End* gadgets.



You can reverse the measurement direction of the arc from the standard counterclockwise measurement by choosing the *Arc Direction* – gadget. If you want line segments drawn from the center to the ends of the arc, choose the *Draw Radii* checkbox gadget.



After entering the values and clicking on the *OK* gadget, the requester will close and the arc will be drawn.

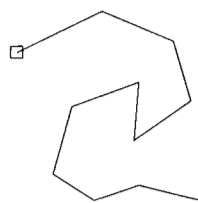
Freehand Tool



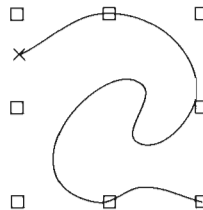
The *Freehand* tool is used to draw smooth freehand lines. There are two ways to use the *Freehand* tool. The most common method is to use it as you would a pencil. Select the *Freehand* tool from the toolbox and drag the mouse on the screen until you create the desired shape. You will see the approximate path as a series of connected straight line segments as you drag the mouse. Art Expression will redraw the entire path as a connected series of Bézier curve segments when you release the mouse button.

i You can switch between *Freehand* drawing modes at any time.

Art Expression automatically creates a path point approximately every half inch from the previous point as you drag the mouse. If this does not meet your accuracy needs, you can move the mouse and click on each path point manually instead of dragging it. After you have ended the path by pressing the *Esc* key or selecting the *Object* tool, Art Expression will redraw the path as a series of Bézier curve segments.



Freehand path before smoothing



Freehand path after smoothing

The steps to draw a path with the Freehand tool are:

1. Select the Freehand tool.

The mouseform will change to a drawing crosshair.

2. Position the mouse crosshair. Drag the mouse.

Drag the mouse while holding down the left mouse button. A path point will appear approximately every half inch connected to the previous point by a straight line.

3. End the path.

Release the mouse button. Press the *Esc* key or select the *Object* tool to end a path. Art Expression will redraw the path as a series of Bézier curves.

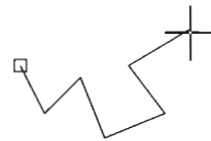
 You can add additional segments to those created by the *Freehand* tool only if *Spring-load tools* is not selected in the *Drawing Prefs* requester. If *Spring-load tools* is selected, the *Object* tool will reselect after each group of segments drawn by dragging the mouse, forcing you to reselect the *Freehand* tool to continue the path.



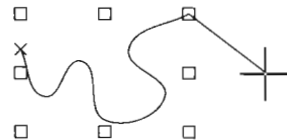
Select the Freehand tool.



Position the crosshair. Drag the mouse button to start the path.



Drag the mouse. Line segments will appear following the path of the mouse.



Release the mouse button to end a freehand segment. Art Expression will redraw the the freehand path as a smooth series of curve segments.



Press *Esc* or select the *Object* tool to end the path without creating additional segments.

These steps give you more control with the Freehand tool:

1. Select the Freehand tool.

The mouseform will change to a drawing crosshair.

2. Position the mouse crosshair. Drag the mouse.

Click the left mouse button to start a path. A line will be drawn from the point at which you clicked.

3. Click to define a path point.

Click again elsewhere to define a path point and to draw the first segment.

4. Click to define another path point.

Continue defining path segments as required.

5. End the path.

Press the *Esc* key or select the *Object* tool to end a path. Art Expression will redraw the path as a series of Bézier curves.



Select the
Freehand tool.



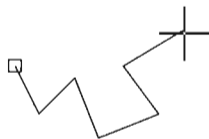
Position the crosshair.
Click the mouse button
to start the path.



Move the mouse
to define the first
segment.



Click to end a line
segment. Move to
the next point.



Continue clicking on the
vertices of the path to
create additional segments.

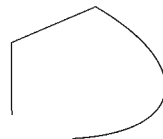


Press *Esc* or select
the *Object* tool to end
the path.

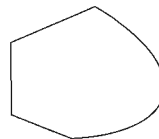
Closing Paths



You can draw open paths with the path tools, or open up closed shapes with the *Split Points* tool. These paths can be closed at any time with the *Close Paths* tool.



Open path



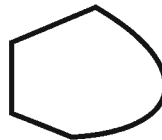
Closed path

The *Close Paths* tool draws straight lines from the endpoints of selected objects' paths to their startpoints. All selected objects will be closed if they are open.

Closed paths are required for placing text within them with the *Text in Shape* command. All other commands and features treat opened and closed paths equally except for the line style attribute. If an object has an open path, the line style will not be applied to the invisible line between the start and endpoint. Even fill styles can be applied to open paths. The object will be filled up to the invisible line between the start and endpoints.



Open, unfilled path



Closed, unfilled path



Open, filled path



Closed, filled path

The steps to close an open path are:

1. Select the object to close.

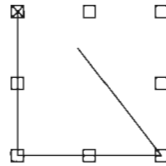
Select the object(s) to close with the *Object* tool. You can select multiple objects by holding down *Shift*.

2. Select the Close Paths tool.

The selected objects will be closed. Lines will be drawn from their endpoints to their startpoints.

Continuing Paths

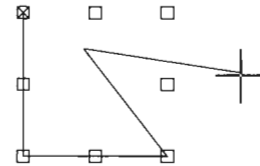
You can extend the path of any object with Art Expression's path tools. To continue drawing from a previously completed object, select it with the *Object* tool and select a path tool. Art Expression will start drawing from the endpoint of the object.



Select the object to extend.

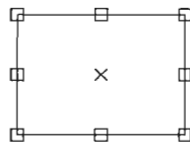


Select a path tool.

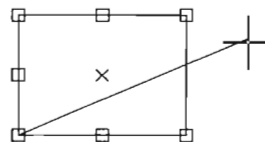


Continue drawing.

You can even continue drawing from closed shapes. The endpoint for a rectangle is at its bottom left corner, for example.



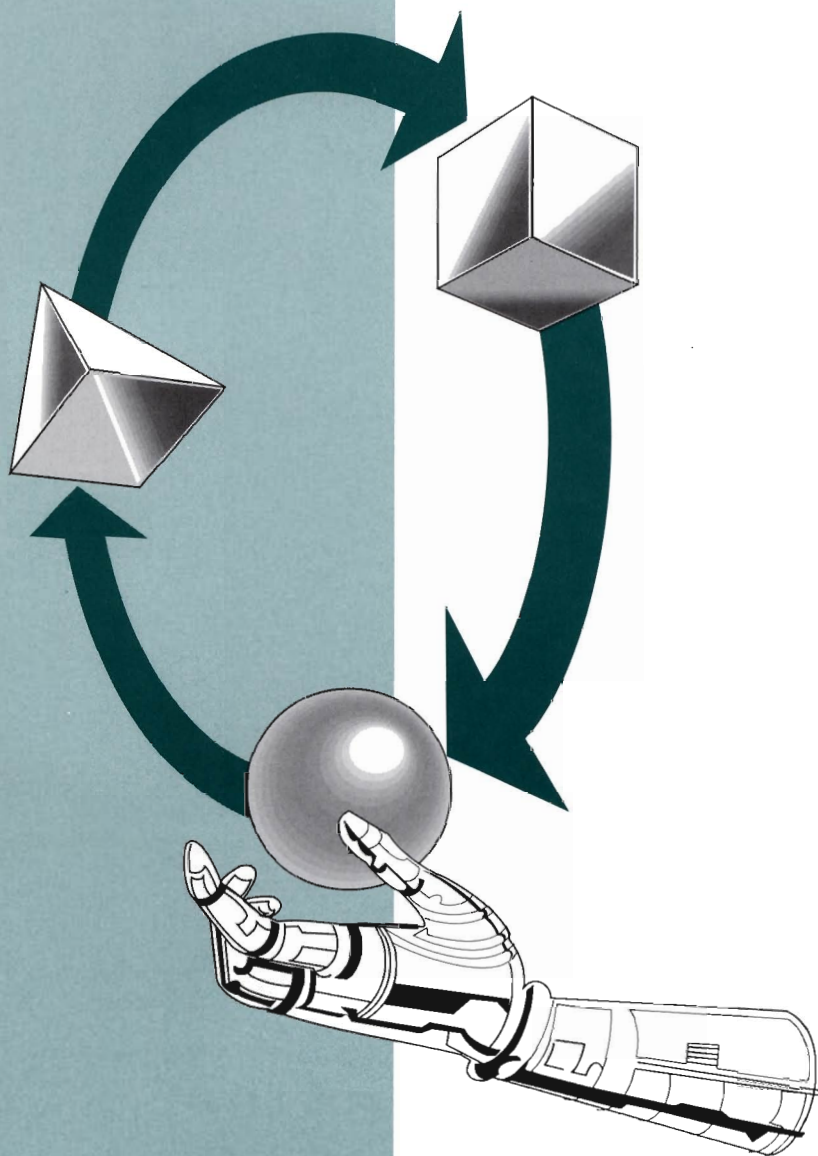
Selected rectangle.



Additional segments added with the Draw tool.

If you accidentally start to extend the path of a selected object, simply choose the *Object* tool, deselect the object (press the space bar or click the mouse in a blank part of the illustration window) and then reselect the path tool.





Working with Objects

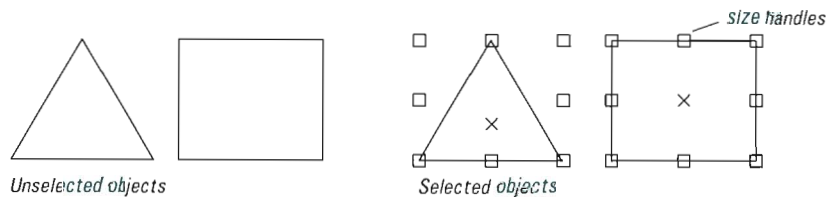


Chapter 3:

Working with Objects

Selecting Objects

Once an object is drawn, *size handles* appear around it to show that it is the selected object. If *Spring-load tools* from *Drawing Prefs* is toggled off, the drawing tool will remain selected, otherwise the *Object* tool will be selected automatically. You can use a basic shape tool to draw another object or a path tool to continue drawing from the selected object.



To manipulate an object—move it, resize it, or otherwise edit it—you must first select it with the *Object* tool. Choose the *Object* tool from the toolbox. If you have just drawn an object, it will be the selected object. To select an object, click on it with the mouse.

Objects may be manipulated when selected, but cannot be reshaped, except for general horizontal or vertical resizing. To reshape an object, you must select it with the *Object* tool, then choose the *Edit Points* tool. This will show the object as a path and allow you to add, delete, move, join and split points.

The steps to select an object are:

- 1. Select the Object tool.**

Choose the *Object* tool from the toolbox unless it is already selected.

- 2. Position the mouse over an object.**

The mouse pointer must be over the path (a segment) of the object. You cannot select an object by clicking on its area (unless it is a filled path).

Three

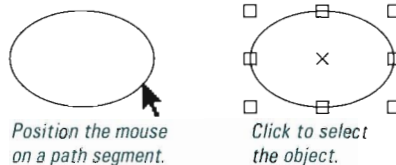
3. Click the mouse button.

Click the left mouse button to select the object. Size handles will appear around it.

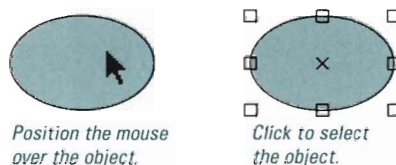
If an object is already selected, attempting to select it will have no effect. You can select objects stacked below other objects by selecting through the objects stacked on top if they are unfilled. More than one object can be simultaneously selected by holding down a *Shift* key and clicking on each object. Alternatively, a marquee box may be drawn around the desired objects to select all enclosed objects.

Examples of Selecting Objects

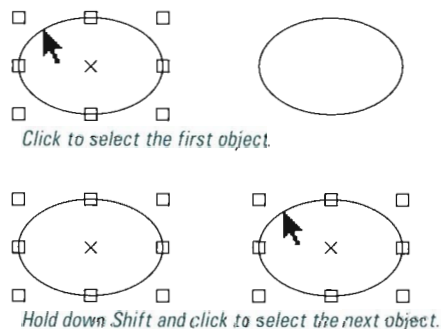
To select an unfilled object: *Click on a path segment of the object.*



To select a filled object: *Click on any part of the object.*

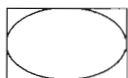


To select specific additional objects: *Hold down a Shift key and click on each object.*



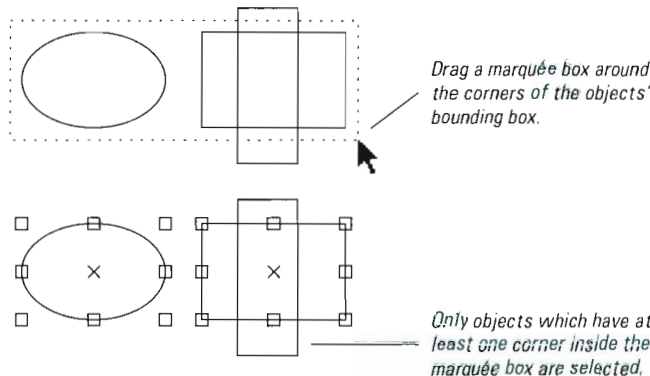
i A marquée box is a rubberband box which you draw around objects to select them.

i The marquée box must go around a corner of the bounding box. The bounding box is a rectangle encompassing all of the segments of the object and is equal to the width and height of the object.

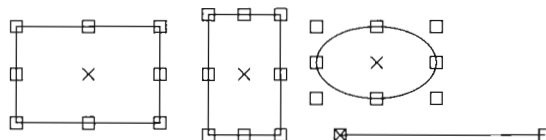


— bounding box

To select all of the objects in an area: Drag a marquée box around the corners of all the objects.

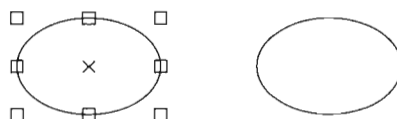
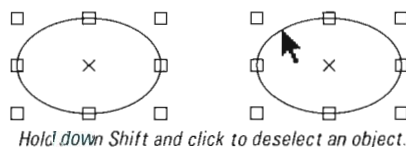


To select all of the objects in an illustration: Choose the Select All (A A) command from the Edit menu.



To deselect the selected object or all the objects in the workspace: Press the Space Bar.

To deselect one selected object without deselecting other objects: Hold down a Shift key and click on the object.



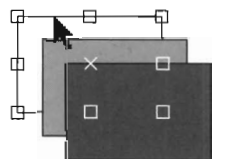
Three

Stacked Objects

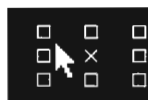
All objects are stacked on the workspace in the order they are drawn. If two or more objects overlap, they are stacked on each other. The order is only changed when you use the *Bring to Front*, *Bring Forward*, *Send to Back* and *Send Backwards* commands, or when you group and ungroup objects.

It is easy to select the bottom object if they only partially overlap. If it is obscured by other objects you will need to hold down *Control* while clicking on it to select the bottom object, or you will accidentally select an object in the foreground.

i You can also select an entire stack of objects with a marquee box and then *Shift* deselect objects to leave only the one you want.



Partially obscured objects are easy to select.

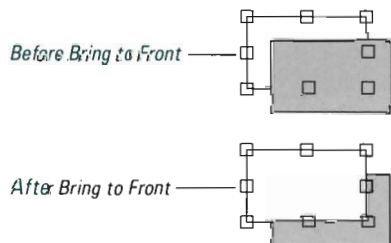


*Completely obscured objects are difficult to select. Hold down *Control* while clicking to select the bottom object in a stack, even if you can't see it.*

Bring to Front / *Send to Back*

The stack order of objects can be changed with commands from the *Object* menu. The *Bring to Front* (*A F*) command moves selected object(s) to the front of the workspace stack. The object will be moved on top of all other objects. *Send to Back* (*A B*) moves selected object(s) to the back of the workspace stack.

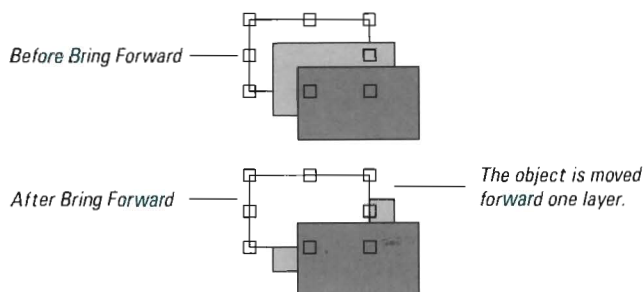
Object		
Bring to Front		A F
Bring Forward		Alt+F
Send to Back		A B
Send Backward		Alt+B
Group		g
Ungroup		u
Line/Fill...		a
Toggle Line		
Toggle Fill		
Toggle Show Boxes		
Edit Coordinates...		A E
Lock		A L
Unlock		A U
Align...		A I
Duplicate		A D



Bring Forward / Send Backward

Object	
Bring to Front	⌘F
Bring Forward	Alt+⌘F
Send to Back	⌘B
Send Backward	Alt+⌘B
Group	g
Ungroup	u
Line/Fill...	a
Toggle Line	
Toggle Fill	
Toggle Show Boxes	
Edit Coordinates...	⌘C
Lock	⌘L
Unlock	⌘U
Align...	⌘I
Duplicate	⌘D

The *Bring Forward* and *Send Backward* commands move selected object(s) one level in the workspace stack. That is, they move an object one level forward or backward with respect to other objects in the workspace.



Moving Objects



See *Resizing Objects* later in this chapter for more information on *Edit Coordinates*.

You can move objects to any position in the illustration workspace. There are two ways to move objects:

- Drag objects with the mouse for easy visual placement.
- Move objects a specified offset with the *Transform...* command.

You can also specify object coordinates with the *Edit Coordinates...* command for exact placement.

The steps to move an object by dragging are:

1. **Select the object to move.**

Select the object to move with the *Object* tool. You can select multiple objects by holding down *Shift*. The selected objects will move together.

2. **Position the mouse pointer over the object to move.**

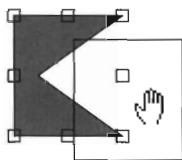
Do not position the mouse pointer over a size handle or you will resize the object. For an unfilled object, point on a line or curve segment.

3. **Drag the object to another position.**

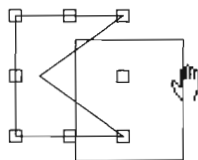
Press the left mouse button and drag the object to another area on screen. You may want to change view magnifications or scroll the screen so that you can see both the original position and the new position at the same time.



When you move an object, you will see its outline follow the mouse. When you release the mouse button, the object will be redrawn in its new position.



If the object is filled, point anywhere on the filled area and drag.

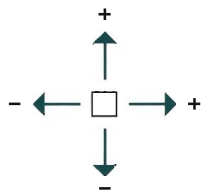
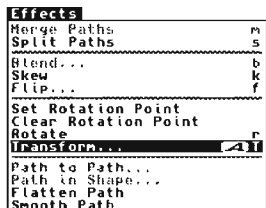


If the object is unfilled, or if you are in Outline mode, point on the outline and drag.



If the object is a text object, point anywhere and drag.

The steps to move an object by specifying offsets are:

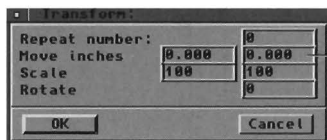


1. Select the object to move.

Select the object to move with the *Object* tool. You can select multiple objects by holding down *Shift*. The selected objects will move together.

2. Choose Transform... from the Effects menu.

The *Transform* requester shows the vertical and horizontal offsets from the previous time you used *Transform*. Both offsets will be zero if you have not yet used *Transform* in this session.



Enter the horizontal and vertical distances to move the object.

3. Enter the distances to move the object.

Type the horizontal distance into the left text gadget, and the vertical distance into the right text gadget. The ruler origin is in the bottom left corner, so positive numbers move objects up and to the right. Negative numbers move objects down and to the left.

4. Click on OK.

If they are not already zero, set the *Repeat Number* and *Rotate* values to zero. Set the *Scale* values to 100%. Click on *OK*. The requester will close and the objects will be moved.



See *Transforming Objects* later in this chapter for more information on the other options of the *Transform* command.

Resizing Objects

There are two ways to change the size of objects:

- Drag an object's handles for easy visual sizing.
- Use the *Edit Coordinates...* command to specify exact coordinates.

The steps to resize an object by dragging a size handle are:

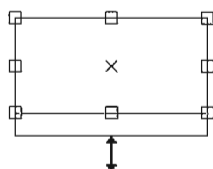
1. Select the object to resize.

Select the object to resize with the *Object* tool. You can select multiple objects by holding down *Shift*. The selected objects will resize together.

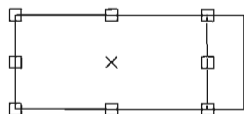
2. Position the mouse pointer over a size handle and drag.

Position the pointer over a size handle, hold down the left mouse button, and drag in any direction. Release the mouse button to redraw the object at its new size.

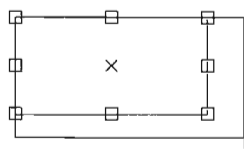
i When you resize an object, you will see its bounding box outline follow the mouse. When you release the mouse button, the object will be redrawn at its new size.



Resize vertically: drag a center horizontal size handle



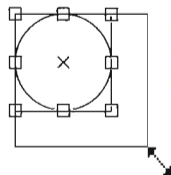
Resize horizontally: drag a center vertical size handle



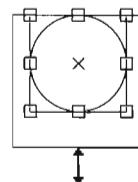
Resize horizontally and vertically: drag a corner size handle

To resize an object without changing its aspect ratio: Hold down a *Shift* key while dragging the size handle to constrain its shape.

i Do not press *Shift* until after you start dragging a size handle, or you will deselect the object.



Drag from a corner size handle to resize in only that direction.



Drag from a center size handle to resize in three directions.

The steps to resize an object by specifying its coordinates are:

i You can specify the coordinates for multiple objects by grouping them, editing their coordinates, then ungrouping them.



i Note that you can move objects by changing their top and left coordinates.

i If an object has a rotation point outside of the object itself, the coordinates will include the rotation point as the outer edge of the object. If you want to specify coordinates without taking the rotation point into account, you must use the *Clear Rotation Point* command first.

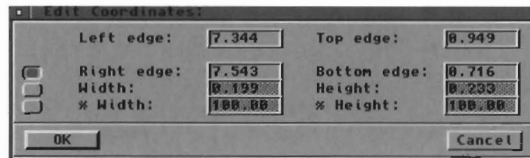
 For more information on rotation points, refer to *Rotating Objects* later in this chapter.

1. Select the object to resize.

Select the object to resize with the *Object* tool. You can only specify the coordinates for one object at a time.

2. Choose Edit Coordinates... from the Edit menu.

The *Edit Coordinates* requester shows the exact position of the object.



3. Enter new values for the coordinates to change.

The coordinates are measured from the ruler origin, or zero point, which is in the bottom left corner of the page. Positive values are above and to the right of the ruler origin. Negative values are below and to the left of the origin. In the example above, the left edge of the object is 7.344 inches to the right of the page edge, and the top edge of the object is 0.949 inches from the bottom of the page edge.

Objects have four coordinates, regardless of their shape. *Edit Coordinates...* always allows you to change the left and top coordinates. You can also change the right and bottom coordinates, or specify the width and height, relative to the left and top coordinates. Alternatively, you can specify a percentage of the width and height, relative to the left and top.

To change from right and bottom coordinates to width and height, or percentage of width and height, you must first click on the corresponding radio button gadget. The radio button will unghost the text gadgets and allow you to enter new values. Only the values in the unghosted text gadgets are used when you click on *OK*.

4. Click on OK.

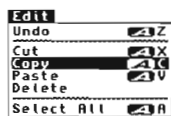
Click on *OK*. The requester will close and the object will be resized.

Copying Objects

You can save time when you need an object similar or identical to an existing object by copying it. Art Expression offers several methods for copying objects:

- The *Copy* command places a copy of the selected object(s) in Art Expression's clipboard for later pasting. You can also use the *Cut* command which does the same thing as *Copy* but removes the original from the workspace.
- The *Duplicate* command creates a copy of the selected object(s) offset from the original object(s).
- The *Clone* technique allows you to drag a copy from an existing object.
- The *Transform* command allows you to create variable numbers of duplicates of existing object(s) offset from the originals by variable amounts.

Copying to the Clipboard



i If you are short on memory and you copy a complex object, or many simple objects, to the clipboard, you can free the memory and delete its contents by holding down *Shift* while selecting the *Cut* command.



Art Expression uses its own clipboard because the Amiga Clipboard is not suitable for transferring Art Expression's complex vector graphics. The clipboard can contain unlimited objects, depending on available memory, but it can only contain a single set of objects. Each time you use the *Cut* or *Copy* commands, the previous contents of the clipboard are deleted and replaced with the newly cut or copied object(s).

To cut or copy object(s) to Art Expression's clipboard, select the object(s) with the *Object* tool and choose the *Cut* (**A X**) or *Copy* (**A C**) commands from the *Edit* menu. You can then paste the clipboard's contents anywhere in the open illustration, or into any other illustration you open later. The *Paste* command is only available if something is stored in the clipboard.

Pasting does not erase the clipboard's contents. You can make multiple copies by repeatedly selecting the *Paste* command. When you choose the command, the mouseform will change to a picture frame shape to help you position the copy on the workspace.

Objects can be pasted at a different size than the original by dragging the mouse while pasting. Drag the mouse to define the new object's size. Release the button when you are done and the copy will be scaled to the desired size.

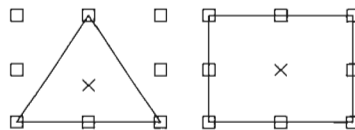
If you hold down a *Shift* key while sizing the object, the original aspect ratio will be retained.

The steps to copy an object with the clipboard are:

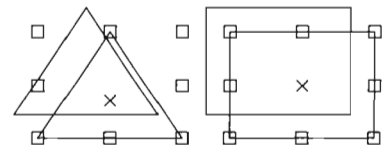
1. **Select the object to copy.**
Select the object to copy with the *Object* tool. You can select multiple objects by holding down *Shift*.
2. **Choose Copy or Cut from the Edit menu.**
The object(s) will be copied or cut to the clipboard.
3. **Choose Paste from the Edit menu.**
The mouseform will change to a picture frame shape. Click on the workspace to place a copy at the top left corner of the picture frame.

Duplicating an Object

Select the *Duplicate* command (*A D*) from the *Object* menu to create a copy of the selected object slightly offset below and to the right of the original object. You can then move the new copy to the desired position.



Select the object(s) to duplicate



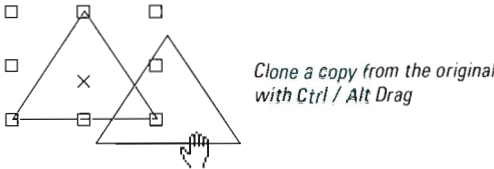
Choose the Duplicate command

The steps to duplicate an object are:

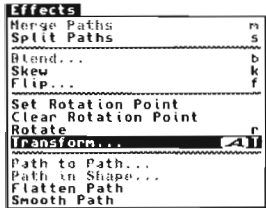
1. **Select the object to copy.**
Select the object to copy with the *Object* tool. You can select multiple objects by holding down *Shift*.
2. **Choose Duplicate from the Object menu.**
The object(s) will be duplicated slightly offset below and to the right of the original object(s).

Cloning an Object

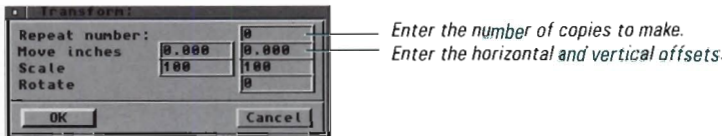
If you need a quick copy of an object you can drag a copy from the original. Hold down the *Ctrl* and *Alt* keys and drag the original object. A copy will be pulled from the original which you can place anywhere on the workspace.



Transform Copying an Object



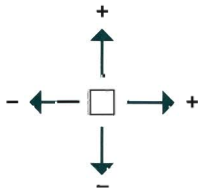
Choosing the *Transform...* command (A T) from the *Effects* menu opens a requester to create a variable number of copies of the selected object offset a variable distance from the original object. All copies remain selected after using *Transform...* to make it easier to group them immediately. The *Transform...* command also allows you to scale and rotate the copies.



 See *Transforming Objects* later in this chapter for more information on the other options of the *Transform...* command.

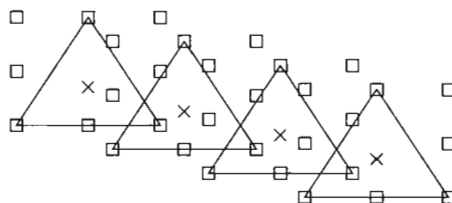
The steps to copy an object with the *Transform...* command are:

- 1. Select the object to copy.**
Select the object to copy with the *Object* tool. You can select multiple objects by holding down *Shift*. The selected objects will move together.
- 2. Choose *Transform...* from the *Effects* menu.**
The *Transform* requester shows the vertical and horizontal offsets from the previous time you used *Transform*. Both offsets will be zero if you have not yet used *Transform...* in this session.
- 3. Enter the number of copies and the offsets.**
Type the number of copies to make into the first text gadget. Type the horizontal copy offset into the left *Move* text gadget, and the vertical distance into the right *Move* text gadget. The ruler origin is in the bottom left corner, so positive numbers move objects up and to the right. Negative numbers move objects down and to the left.



4. Click on OK.

If they are not already zero, set the *Rotate* value to zero and the *Scale* values to 100%. Click on *OK*. The requester will close and the objects will be copied with the values you have entered.



The original element in the top left corner was transformed with 3 copies with offsets of 0.5 inches horizontally and -0.125 inches vertically.

Deleting Objects



Art Expression offers two ways to delete objects from the workspace:

- The *Cut* command removes the selected object(s) from the workspace and copies them to Art Expression's clipboard for later pasting.
- The *Delete* command removes the selected object(s) from the workspace. (You can also use the *Del* key.)

The steps to delete an object are:

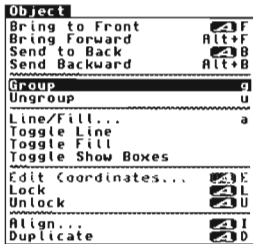
1. Select the object to delete.

Select the object to delete with the *Object* tool. You can select multiple objects by holding down *Shift*.

2. Choose Cut or Delete from the Edit menu.

The *Cut* command will copy the object(s) to the clipboard and remove them from the workspace. The *Delete* command will simply remove the object(s) from the workspace.

Grouping Objects



See *Stacked Objects* earlier in this chapter for more information on object stack order.

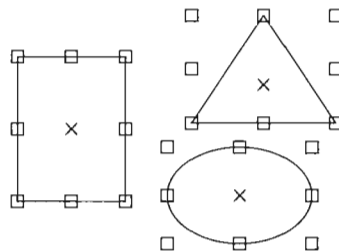
Objects can be combined into groups with the *Group (g)* command from the *Object* menu to freeze their relative positions and to simplify manipulating them. The objects are brought to the top of the workspace stack but their relative stack positions are maintained. A group is treated as one object, and it can be moved, resized and transformed. The appearance of the individual objects is unchanged, but trying to select any object in a group will select the group, not the object. When you need to manipulate a single element in a group, you must ungroup the group into its original objects.

When a group is selected, size handles will appear around the outer edges of the objects. Resizing a group will resize each object proportionally. The attributes (fill color, line style...) of each object are retained when objects are grouped.

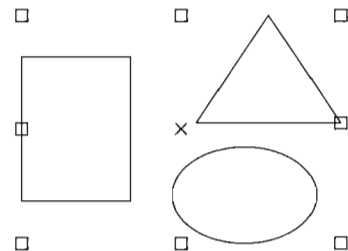
You can group any combination of objects, including basic shapes, complex paths, composite objects, text objects and even groups of other objects. There is a limit of 8 group levels.

The steps to group objects are:

- 1. Select the objects to group.**
Select the objects to group with the *Object* tool.
- 2. Choose the Group command.**
Choose the *Group (g)* command from the *Object* menu.



Select the objects to group



Choose the Group command

Groups are ungrouped in the same order they were grouped. That is, sub-groups are not ungrouped when a group of which they are a part is ungrouped.

Three

Object	
Bring to Front	⌘F
Bring Forward	Alt+F
Send to Back	⌘B
Send Backward	Alt+B

Group	g
Ungroup	u

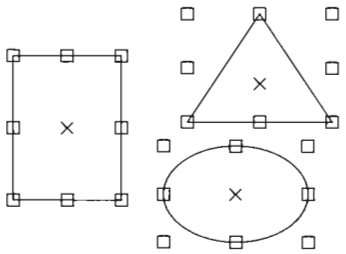
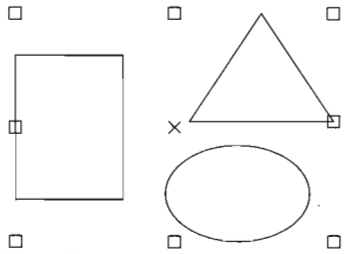
Line/Fill...	a
Toggle Line	
Toggle Fill	
Toggle Show Boxes	

Edit Coordinates...	⌘E
Lock	⌘L
Unlock	⌘U

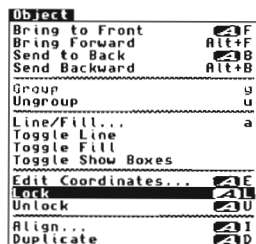
Align...	⌘I
Duplicate	⌘D

The steps to ungroup a group are:

- 1. Select the group to ungroup.**
Select the group to ungroup with the *Object* tool.
- 2. Choose the Ungroup command.**
Choose the *Ungroup (u)* command from the *Object* menu.



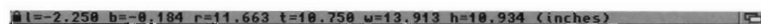
Locking Objects



Art Expression can lock an object in place so that you do not accidentally move or resize it. You can still change its fill and line attributes and group it, but you cannot transform it in any way.

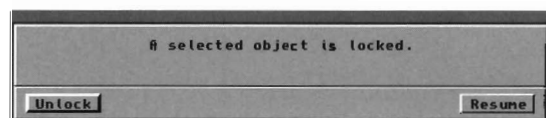
If you attempt to move or resize a locked object, Art Expression will inform you that the object is locked. If you copy or duplicate a locked object, the new copies will also be locked.

You can tell if an object is locked when you select it if the coordinate bar is displayed. A padlock symbol will appear at the left edge of the coordinate bar when you select a locked object.



The *Lock* (A L) command from the *Object* menu will lock an object. The only way to remove a lock is with the *Unlock* (A U) command.

If you attempt to move, resize or edit a locked object, a requester will open asking if you want to unlock the object. Choose the *Unlock* gadget to unlock the object or the *Resume* gadget to close the requester without changing the object's lock status.



The steps to lock or unlock an object are:

1. **Select the object(s) to lock or unlock.**
Select the object(s) with the *Object* tool.
2. **Choose Lock or Unlock from the Object menu.**

Locked Objects in Groups

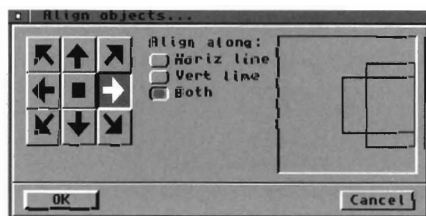
If you group a locked object or a locked group, the new group will be locked automatically. Unlocking a group allows you to manipulate it, but does not unlock its sub-objects. That is, if you unlock the group, the individual objects will still be locked. This provides you with flexibility at the group level without changing the lock status of individual objects.

Aligning Objects

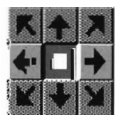


Art Expression can align objects in relation to each other. You can align a single object or group, or multiple objects and groups. Art Expression aligns selected elements to each other along their top, bottom, left or right edges. You can choose to align elements horizontally or vertically, or both simultaneously.

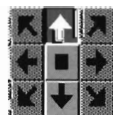
Choosing the *Align...* (A I) command from the *Object* menu will open a requester to choose the alignment axes and edges.



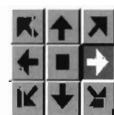
The three radio button gadgets in the middle of the requester allow you to select the alignment axes. Click on the appropriate gadget to choose between horizontal, vertical or both axes. With horizontal alignment, you can align selected objects to their top, center or bottom edges. Vertical alignment allows you to align objects to their left, center or right edges. Both combines these two alignment options. Choosing horizontal or vertical alignment will gray out the inappropriate alignment edges.



Vertical Alignment



Horizontal Alignment



Both Alignment

The gadgets on the left are used to select edges for alignment. Click on the appropriate gadget for left, center, right, top, or bottom alignment. The sunken feedback area on the right shows how two objects would be aligned with the selected combination of alignment options.

The *Align...* command functions in different ways depending on the lock status of the selected objects.

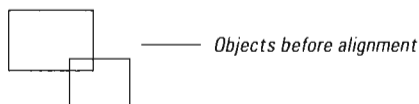
Aligning Unlocked Objects

Objects can be aligned to each other at any position on the page if they are unlocked. After choosing an alignment axis and alignment edges from the *Align* requester, you will be able to select an alignment point with full-screen crosshairs.

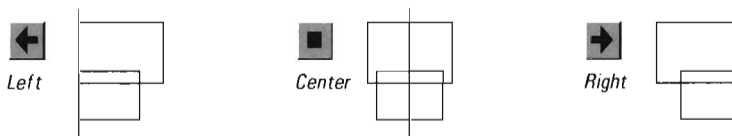
The steps to align elements to each other are:

1. **Select the objects to align.**
Select two or more objects to align with the *Object* tool.
2. **Choose Align... from the Object menu.**
A requester will ask if you want to unlock the locked object(s). Choose the *Unlock* gadget. The *Align* requester will then open.
3. **Select the alignment axes and alignment edges.**
To align objects on a vertical axis, select the *Vert Line* gadget and choose the *left*, *center* or *right* gadgets.
To align objects on a horizontal axis, select the *Horiz Line* gadget and choose the *top*, *center* or *bottom* gadgets.
To align objects in both directions, select the *Both* gadget and choose any of the nine gadgets. Click on *OK* to align the objects.
4. **Choose the alignment point.**
Full-screen crosshairs will appear over the mouse pointer. For horizontal axis alignment, a horizontal crosshair will appear. For vertical axis alignment, a vertical crosshair will appear. For both axes, a true crosshair will appear. Click on the screen at the desired alignment point. Art Expression will align the objects to the selected axis at that point.

Examples of Aligning Unlocked Objects

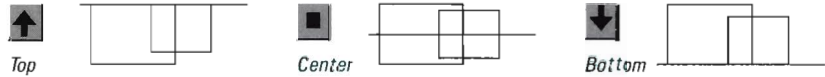


Vertical Axis: *Objects are aligned on a vertical axis with a vertical crosshair.*

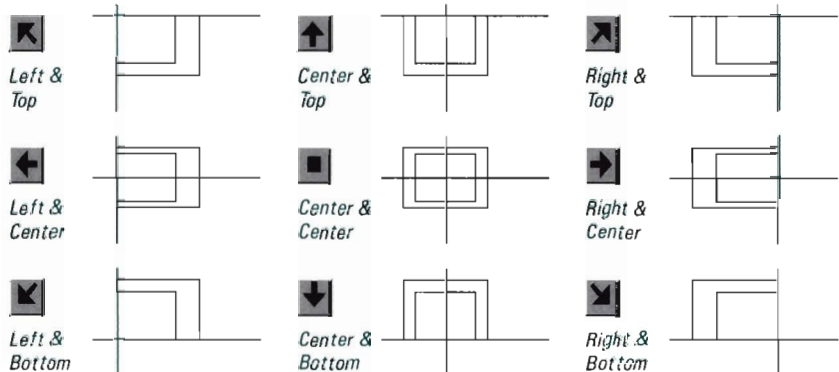


Three

Horizontal Axis: *Objects are aligned on a horizontal axis with a horizontal crosshair.*



Both Axes: *Objects are aligned on the horizontal and vertical axes with a crosshair.*



Aligning Locked Objects

You can also align unlocked objects to locked objects. Instead of using crosshairs to select an alignment point, the unlocked object(s) will be aligned to the bounding box of the locked object(s).

The *Align* requester functions in the same manner as for aligning only unlocked objects. After choosing an alignment axis and alignment edges from the *Align* requester, the unlocked objects will be aligned immediately to the locked objects.

The steps to align elements to each other are:

1. Select the objects to align.

Select two or more objects to align with the *Object* tool.

2. Choose *Align...* from the *Object* menu.

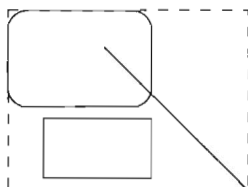
A requester will ask if you want to unlock the locked object(s). Choose the *Resume* gadget. The *Align* requester will then open.

3. Select the alignment axes and alignment edges.

To align objects on a vertical axis, select the *Vert Line* gadget and choose the *left*, *center* or *right* gadgets.

To align objects on a horizontal axis, select the *Horiz Line* gadget and choose the *top*, *center* or *bottom* gadgets.

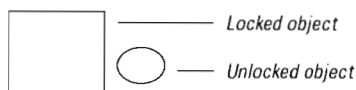
To align objects in both directions, select the *Both* gadget and choose any of the nine gadgets. Click on *OK* to align the objects.



Bounding box of locked objects to which unlocked objects will be aligned.

If more than one object is locked, the bounding box surrounding the locked objects will be used for aligning the unlocked objects.

Examples of Aligning Locked Objects



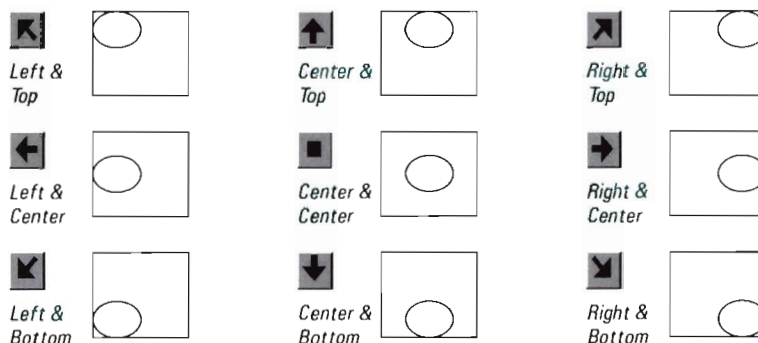
Vertical Axis: The unlocked object(s) are aligned to a vertical edge of the bounding box of the locked objects.



Horizontal Axis: The unlocked object(s) are aligned to a horizontal edge of the bounding box of the locked objects.



Both Axes: The unlocked object(s) are aligned to both edges of the bounding box of the locked objects.

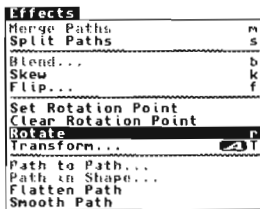


Rotating Objects

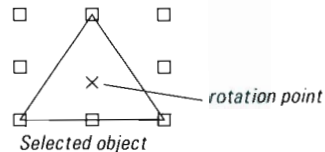
You can rotate any object about its rotation point. Objects are rotated on the two dimensional workspace around the Z axis. The Z axis is an imaginary line perpendicular to the workspace's plane. Art Expression offers three ways to rotate objects:

- The *Rotate* command allows quick visual rotation.
- The *Rotate* requester allows you to specify rotation values numerically.
- The *Transform* requester also permits rotation, but it is normally used in conjunction with duplicating an object with offsets for special effects.

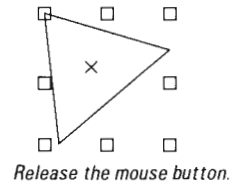
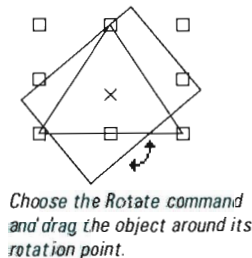
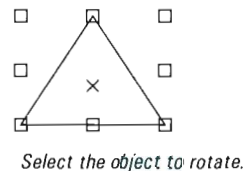
Visual Rotation



The *Rotate* command from the *Effects* menu is used to rotate an object about its rotation point. The rotation point can be set with the *Set Rotation Point* command and is shown as an "X" symbol.



To rotate an object visually, select the object with the *Object* tool and choose the *Rotate* (r) command from the *Effects* menu. The mouseform will change to a rotation shape. Drag anywhere on the object to rotate it. The mouseform will change again to indicate the direction of rotation. The object's outline box will follow the mouse as you rotate the object. When you release the mouse button, the object will be redrawn.



The steps to rotate an object visually are:

1. Select the object to rotate.

Select the object to rotate with the *Object* tool. You can only rotate one object at a time unless the objects are grouped.

2. Choose Rotate from the Effects menu.

The mouseform will change to the rotate shape.

3. Drag the object to rotate it.

Drag the object's outline box. When it is rotated as desired, release the mouse button to redraw the object.

4. End rotation.

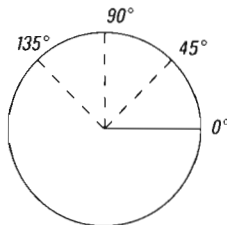
To stop rotating an object, click outside the object's path, press the *Esc* key, or reselect the *Object* tool.

Rotating an Object Numerically

Objects can be rotated precisely with the Rotate requester. The requester is opened by selecting the *Rotate* command from the *Effects* menu while holding down a *Shift* key (*R*).



The text gadget in the *Rotate* requester allows you to specify the rotation value from 0° to 359° in 1° increments. Alternatively, you can click on the arrow gadgets to increase or decrease the rotation value without having to type a number. The *-90 deg* and *+90 deg* gadgets are used to change the rotation value directly to 90° or -90° because these values are so commonly used.



Rotation values are specified in the same way as a drawing protractor. Zero degrees is at the 3 o'clock position, 90° is at 12 o'clock, 180° is at 9 o'clock and 270° is at 6 o'clock.

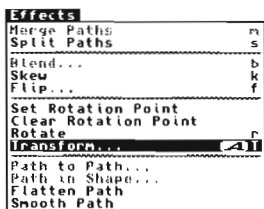
Three

The *Copy and Rotate* checkbox gadget in the *Rotate* requester will rotate a copy of the object, but leave the original object untouched. This can be useful for mirroring objects at various angles.

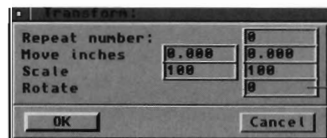
The steps to rotate an object numerically are:

- 1. Select the object to rotate.**
Select the object to rotate with the *Object* tool. You can only rotate one object at a time unless the objects are grouped.
- 2. Choose Shift Rotate from the Effects menu.**
Choose the *Rotate* command while holding down a *Shift* key (*R*). The *Rotate* requester will open.
- 3. Enter the rotation value.**
Set the rotation value with the text gadget, arrow gadgets or *90 deg* gadgets. Check *Copy and Rotate* if applicable. Click on *OK* to rotate the object.

Transform Rotation



Objects can also be rotated with the *Transform...* command. Choosing the *Transform...* command (*A T*) from the *Effects* menu opens a requester to rotate a variable number of copies of the selected object offset a variable distance from the original object. All copies remain selected after using *Transform...* to make it easier to group them immediately. The *Transform...* command also allows you to scale the objects.



Enter the rotation value



See *Transforming Objects* later in this chapter for more information on the other options of the *Transform* command.

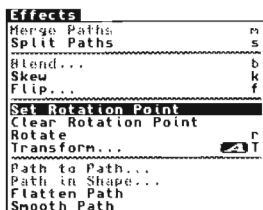
The steps to rotate an object with the Transform command are:

- 1. Select the object to rotate.**
Select the object to rotate with the *Object* tool. You can only rotate one object at a time unless the objects are grouped.
- 2. Choose Transform... from the Effects menu.**
The *Transform* requester shows the vertical and horizontal offsets from the previous time you used *Transform*. Both offsets will be zero if you have not yet used *Transform* in this session.

3. Enter the rotation value.

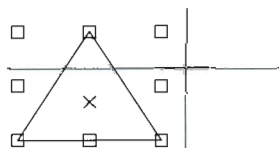
If you specify zero copies, the original object will be rotated. If you specify any other number of copies, each additional copy will be rotated by the rotation value. Type the number of copies to make into the first text gadget and the rotation value into the last text gadget. You may also specify offsets and scaling factors.

Setting the Rotation Point

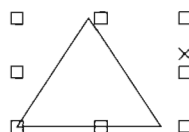


The rotation point for each object defaults to its horizontal and vertical center. This point can be changed at any time with the *Set Rotation Point* command from the *Effects* menu. The rotation point is considered part of an object and affects its coordinates.

Selecting the *Set Rotation Point* command changes the mouseform to a drawing crosshair. Full-screen drawing crosshairs will appear to help you select the rotation point. Move the mouse to the desired position and click the mouse button. The rotation point will be moved and the object's size handles will be moved to reflect the new position.



Select the *Set Rotation Point* command



Click on the workspace to set the new rotation point

The steps to set the rotation point are:

1. Select the object to change.

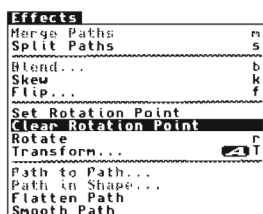
Select the object with the *Object* tool. You can only set the rotation point for one object or group at a time.

2. Choose *Set Rotation Point* from the *Effects* menu.

Full-screen drawing crosshairs will appear.

3. Set the rotation point.

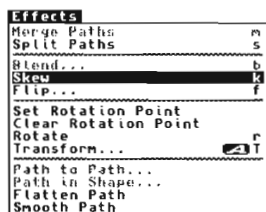
Click anywhere on the workspace to set the new rotation point.



Centering the Rotation Point

The *Clear Rotation Point* command from the *Effects* menu will reset the rotation point to the center of the selected object or group.

Skewing Objects

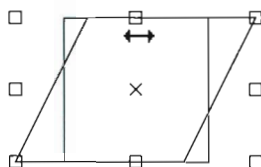


See *Setting the Rotation Point*

later in this chapter for more information on changing the rotation point.

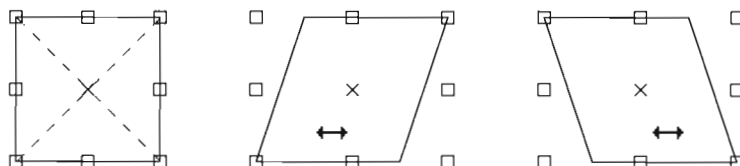
Art Expression can skew an object horizontally or vertically about its rotation point. The rotation point can be set with the *Set Rotation Point* command and is shown as an “X” symbol.

To skew an object, select it with the *Object* tool and choose the *Skew* (k) command from the *Effects* menu. The mouseform will change to a skew shape. Drag anywhere on the object to skew it. The mouseform will change again to indicate the direction of skew. The object’s outline box will follow the mouse as you skew the object. When you release the mouse button, the object will be redrawn.

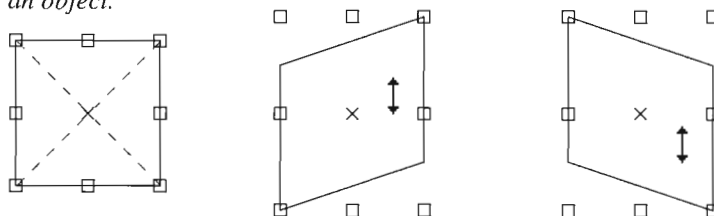


The direction of skew depends on which quadrant of the object the mouse pointer is in when you start to drag the object to skew it. The object is divided into quadrants from its rotation point.

To skew an object horizontally: Start the skew in the top or bottom quadrants of an object.



To skew an object vertically: Start the skew in the left or right quadrants of an object.



i If an object’s rotation point is set at a corner of its outline box, or outside of its path, it will only have two or three quadrants.

The steps to skew an object are:

1. Select the object to skew.

Select the object to skew with the *Object* tool. You can only skew one object or group at a time.

2. Choose Skew from the Effects menu.

The mouseform will change to the skew shape.

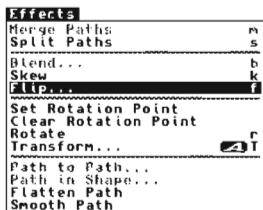
3. Drag the object to skew it.

Drag the object's outline box. Start in the top or bottom quadrants to skew it horizontally, or in the left or right quadrants to skew it vertically. When it is skewed as desired, release the mouse button to redraw the object.

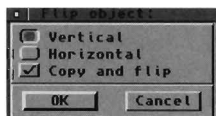
4. End skew.

To stop skewing an object, click outside the object's path, press the *Esc* key, or reselect the *Object* tool.

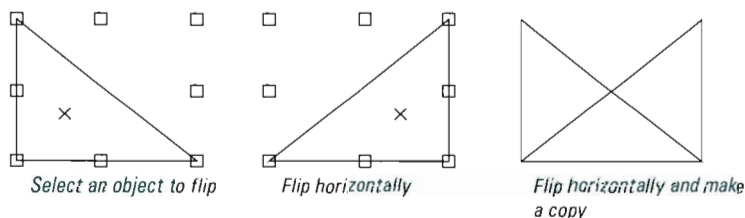
Flipping Objects



Art Expression can flip an object horizontally or vertically. To flip an object, select it with the *Object* tool and choose the *Flip...* (f) command from the *Effects* menu. The *Flip* requester will open.



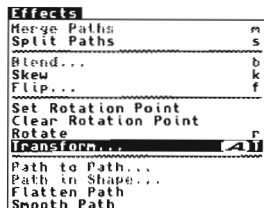
Two radio button gadgets allow you to decide between horizontal or vertical flipping. The checkbox gadget preserves the original object, instead creating and flipping a new copy. The new copy will be positioned directly on top of the original object and they will both be selected.



The steps to flip an object are:

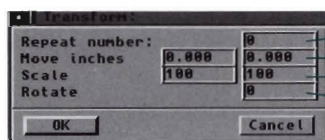
1. **Select the object to flip.**
Select the object(s) to flip with the *Object* tool. You can select multiple objects by holding down *Shift*.
2. **Choose Flip... from the Effects menu.**
The *Flip* requester will open.
3. **Select the direction to flip the object.**
Select vertical or horizontal flipping, and then toggle on or off the *Copy and flip* gadget. Click on *OK* to flip the object.

Transforming Objects



Art Expression can transform objects in a number of ways. The *Rotate*, *Duplicate*, *Copy & Paste* and *Edit Coordinates...* commands offer several different effects, but are limited in scope. The *Transform...* command combines their features in one powerful step and repeat function.

Selecting the *Transform...* command (A T) from the *Effects* menu opens a requester to create, move, scale and rotate an object. All copies remain selected after transforming to make it easier to group them immediately.



- Enter the number of copies to create.
- Enter the horizontal and vertical offsets for each copy.
- Enter the horizontal and vertical scaling for each copy.
- Enter the rotation value for each copy.

- **Number of Copies:**

0=no copies, >0=additional copies

- **Move (horizontal, vertical):**

0,0=no movement, <0 or >0=movement

- **Scale (horizontal, vertical):**

100,100=no scale, <100=smaller, >100=larger

- **Rotate:**

0=no rotation, <0=clockwise rotation, >0=counterclockwise

The steps to Transform an object are:

1. **Select the object to transform.**

Select the object(s) to transform with the *Object* tool. You can transform multiple objects by holding down a *Shift* key while selecting them.

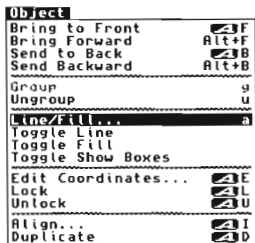
2. **Choose Transform... from the Effects menu.**

The *Transform* requester shows the values from the previous time you used *Transform*.

3. **Enter the transformation values.**

If you specify zero copies, only the original object will be transformed. If you specify any other number of copies, each additional copy will be moved, scaled and rotated by the specified values. Type the number of copies to make into the first text gadget, the horizontal and vertical offsets into the second row of gadgets, the scale percentages into the third row and the rotation value into the last text gadget.

Lines and Fills



All objects have line and fill attributes. A *fill* is the pattern inside an object. It can be clear, a solid color, or a percentage of a solid color. A *line* is the stroke which outlines a path or object. It can be clear, a solid color or a broken pattern color. Connected line segments have caps and joins which affect how they are attached to each other.

The *Line/Fill...* (a) command is used to set the line, fill and color attributes of selected objects. The information in the requester opened by *Line/Fill...* is dependent on the objects selected:

- If no objects are selected, the current default attributes will be displayed. You can change the default attributes when no objects are selected.
- If one object is selected, its attributes will be displayed. You can change all of its attributes.
- If multiple objects with identical attributes are selected, their attributes will be displayed. You can change all of their attributes.
- If multiple objects with conflicting attributes are selected, the attributes of the bottom object will be displayed. The others' attributes cannot be seen. Only the attributes you change will be set when you click on *OK*. Unchanged attributes will not be changed. This allows you to change one attribute of objects with conflicting attributes, without affecting the other attributes.



Default Line and Fill Attributes

The default attributes for objects are:

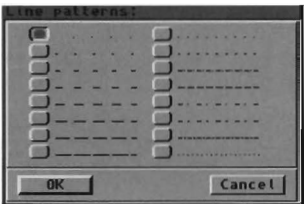
Lines: Style=solid. Thickness=0.5 pt. Cap=butt. Join=miter. Color=black.
Fill: Style=none. Color=black.

Line Styles

Art Expression offers 19 line styles which you can apply to objects. The first three common styles are available by clicking on their radio button gadgets. The *None* style is clear. Objects with *None* line styles will be unstroked. Selecting the *None* style is the same as choosing the *Toggle Line* command for a stroked object. The second style is a solid stroke, the default for all objects drawn in Art Expression. The third common style is a dash pattern.



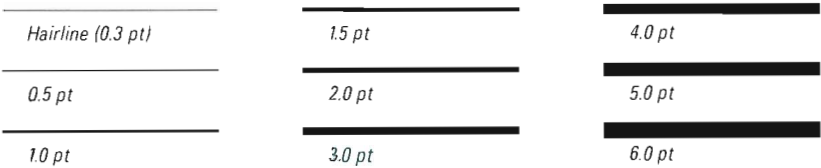
Sixteen additional styles are available from the *Other...* sub-requester. When you click on the *Other...* radio button gadget, the *Other Line Styles* requester will open to select an alternate dashed line style.



Line Thickness

Art Expression offers three predefined line thicknesses, as well as a text gadget to enter a variable weight. The *Hairline* radio button gadget creates lines about 0.3 points thick, a traditional hairline. *0.5 pt* creates a half point rule and is the program default. *1.0 pt* creates a full point line.

When you click on the radio button beside the line thickness text gadget, the text gadget will unghost and you can enter any line weight.



Caps and Joins

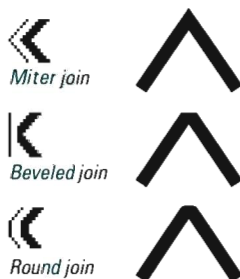
There are three styles of caps and joins available in Art Expression. Caps are the end styles of lines. They are selected by clicking on the appropriate radio button gadget.



Butt caps are the default. They have flat ends and do not overhang the line ends. Square caps hang over the line ends by the width of the line. Round caps also hang over the line ends but have rounded ends.

Joins are the way in which lines are connected. They are selected by clicking on the appropriate radio button gadget.

i If a miter join is too sharp it will revert to a bevel.



Miter joins are the default. They have sharp ends which overhang the end of the line segments. Beveled joins are flattened and round joins have smooth ends.

Toggle Line

You can toggle on and off an object's line style with the *Toggle Line* command. This simply changes an object from the clear style to the previously selected style (solid is the default), or vice versa, depending on the line style of the object(s) selected.

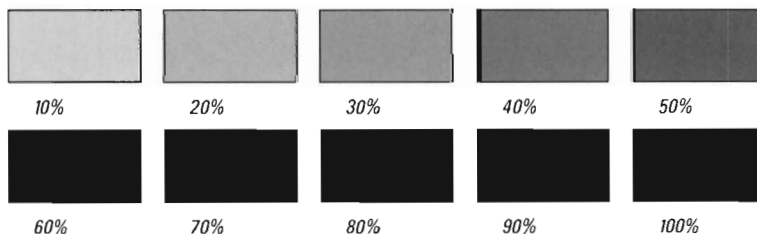
Object	
Bring to Front	⌘F
Bring Forward	Alt+F
Send to Back	⌘B
Send Backward	Alt+B
Group	g
Ungroup	u
Line/Fill...	a
Toggle Line	
Toggle Fill	
Toggle Show Boxes	
Edit Coordinates...	⌘E
Lock	⌘L
Unlock	⌘U
Align...	⌘I
Duplicate	⌘D

Fill Styles

Art Expression offers 3 fill styles which you can apply to objects. The first two common styles are available by clicking on their appropriate radio button gadget. The *None* style is clear. Objects with *None* fill styles will be unfilled. Selecting the *None* style is the same as choosing the *Toggle Fill* command for a stroked object. The second style is a solid fill, the default for all objects drawn in Art Expression.



Alternatively, you can select the radio button gadget to unghost the percentage fill style text gadget. You can enter fill percentages from 0 to 100% in 1% increments. This is a useful way to create color tints and greyscales.



Toggle Fill

You can toggle on and off an object's fill style with the *Toggle Fill* command. This simply changes an object from the clear style to the previously selected style (solid is the default), or vice versa, depending on the fill style of the object(s) selected.



Filling Open and Overlapping Paths

You can fill any object in Art Expression, even if it is an open path. If the path crosses over itself, the overlapping sections will cancel out and will be unfilled.



The steps to change the line, fill and color attributes of existing object(s) are:

- 1. Select the object(s) to change.**
Select the object(s) to change with the *Object* tool. You can select multiple objects by holding down *Shift*.
- 2. Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open. If the objects have identical fill, line, cap, join and color attributes, the attributes of the objects will be displayed. If any of the attributes conflict, the attributes of the bottom object will be displayed.
- 3. Change the attributes.**
Change any of the attributes by clicking on the appropriate gadgets. Only the attributes changed will be reset when you click on *OK*, so if any of the objects' attributes conflict, those which are unchanged will not be overwritten. Click on *OK* when done.

The steps to change the default line, fill and color attributes for future objects are:

- 1. Choose the Line/Fill... command from the Object menu.**
Do not select any objects before opening the *Line/Fill* requester.
- 3. Change the attributes.**
Change any of the attributes by clicking on the appropriate gadgets. Click on *OK* when done. The attributes selected will be used for future objects drawn during the current session of Art Expression. You can change the default attributes back or to other values at any time by repeating these steps.

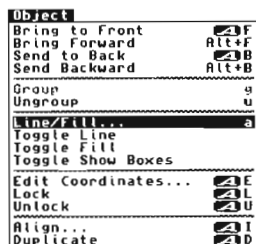
Color

i See the preceding page for information on changing the color of objects, and for changing the default line and fill colors.

Art Expression offers sophisticated color facilities to create professional illustrations. All objects in an illustration have line and fill color attributes which default to black. You can change these to any color from the Art Expression palette, or you can create your own colors.

Art Expression can work in any video mode of standard Amiga computers. The Amiga's color palette is limited compared to the needs of modern color publishing, so Art Expression dithers (mixes) colors on screen to approximate colors more closely. This feature is automatic, although you can choose the screen colors available to Art Expression for dithering.

Colors are chosen and edited by selecting the *Line/Fill...* command from the *Object* menu.



Choose a line color by clicking in the scrolling list in the left half of the *Line/Fill* requester. Choose a fill color from the scrolling list on the right.

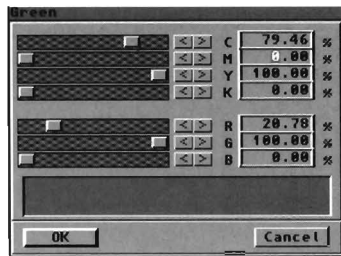
Adding, Deleting and Editing Colors

Colors may be added to the Art Expression color palette by choosing the *Add* gadget in the *Line* or *Fill* portion of the requester. Existing colors can be edited by selecting a color and then choosing the *Edit* gadget. Selected colors can be deleted from the color list with the *Delete* gadget.

The color requester opens after choosing one of the *Add* or *Edit* gadgets. This requester shows the color components of the selected or new color. The color components can be changed using either the RGB or CMYK color definition systems. Drag the slider gadgets or enter values from 0 to 100% in the appropriate text gadgets to change a color.

Three

i If you create a blend, Art Expression will create the intermediate colors but will not add them to the color palette in order to not clutter it. If you select one of the intermediate objects and choose *Line/Fill...*, the color will be shown as an unnamed color.



When you change the values for one of the color models, the values for the other color model will reflect the changes. Art Expression shows the color in the sunken feedback area as closely as possible, given the Amiga's palette limitations. If you are running on a 2 color workbench, Art Expression will be unable to display the actual color in the feedback area.

The primary color definition system is CMYK, because it is widely used in the printing industry. RGB is provided as a second color model for those who are more familiar with this video standard.

CMYK: Cyan, Magenta, Yellow and Black is the primary color model used by printers and presses. Cyan, magenta and yellow are the primary colors of reflected light. The three primary colors can be mixed in varying amounts to create any color. Black is added to the first three colors to produce contrast.

RGB: Red, Green, Blue is a popular color model because it is used by all computer monitors to produce color. Red, green and blue are the primary colors of transmitted light.

The steps to add a new color to the Art Expression palette are:

- 1. Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open.
- 2. Enter a color name.**
Enter a color name in either the line color or fill color text gadgets.
- 3. Choose the Add gadget.**
The *Add* color requester will open.
- 4. Adjust the color components.**
Drag the sliders to the desired values or enter values into the text gadgets. Click on *OK* when done.

The steps to edit an existing color in the Art Expression palette are:

1. **Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open.
2. **Select a color.**
Choose a color from either the line or fill color scrolling lists.
3. **Choose the Edit gadget.**
The *Edit* color requester will open.
4. **Adjust the color components.**
Drag the sliders to the desired values or enter values into the text gadgets. Click on *OK* when done.

The steps to delete a color from the Art Expression palette are:

1. **Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open.
2. **Select a color.**
Choose a color from either the line or fill color scrolling lists.
3. **Choose the Delete gadget.**
The selected color will be permanently removed from the list. Any objects using that color will be recolored black.

Loading and Saving Color Palettes

Art Expression allows you to load and save palettes of colors. The colors black and white are always present and cannot be edited or deleted. If a file called `ArtExpression.colors` is present in the support files path during program loading, it will be loaded automatically as the default palette.

Other palettes can be saved under any name for later use in order to keep the color selector list short and usable. The *Line/Fill* requester's *Save* gadget will open a file requester to enter a filename for the current palette.

Palettes may be loaded from disk into Art Expression at any time with the *Load* gadget in the *Line/Fill* requester. Art Expression will first ask you whether you want to delete colors not used in the open illustration or whether you want the new colors appended to the current list. Duplicate names and colors with duplicate values will be filtered out automatically.

The steps to save a color palette are:

1. **Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open.
2. **Choose the Save gadget.**
A file requester will open. Choose a path and filename for the palette before clicking on *OK*. If you want the palette to load automatically when starting Art Expression, save the file as `ArtExpression.colors` in the support files path.

The steps to load a saved color palette are:

1. **Choose the Line/Fill... command from the Object menu.**
The *Line/Fill* requester will open.
2. **Choose the Load gadget.**
A requester will ask whether the unused colors should be deleted or whether the new colors should be appended to the current palette. Choose one of the options.
3. **Choose a color palette.**
A file requester will open. Choose a previously saved color palette and click on the *OK* gadget. The colors will be added to the current color palette.

Process Color Selectors and Pantone Colors

Art Expression comes with a palette of common colors. You can create other colors by referencing the feedback gadget of the *Add Color* requester, but the best way is to reference a process color selector. Pantone Inc. sells several excellent process color selectors. (Pantone is a registered trademark of Pantone, Inc.) The Pantone Process Color Imaging Guide (CMYK Edition) is an excellent accompaniment to Art Expression. You can choose a process or solid color from the selector and then enter the CMYK equivalents into Art Expression's *Add Color* requester.

Note that Art Expression does not directly support the Pantone Matching System. You must enter color components from a Pantone Guide. Pantone may be contacted at: Pantone, Inc., 55 Knickerbocker Road, Moonachie, NJ 07074, USA. (201) 935-5500.

There are several other color models similar to the Pantone system for which you can purchase process color selectors. Contact your local art or graphics store for more information.

Adding Colors Quickly

You can edit Art Expression color palettes in a text editor if desired. The format of the file is:

```
%%CMYKCustomColor:
# of colors
C Y M K Colorname
C Y M K Colorname
etc...
```

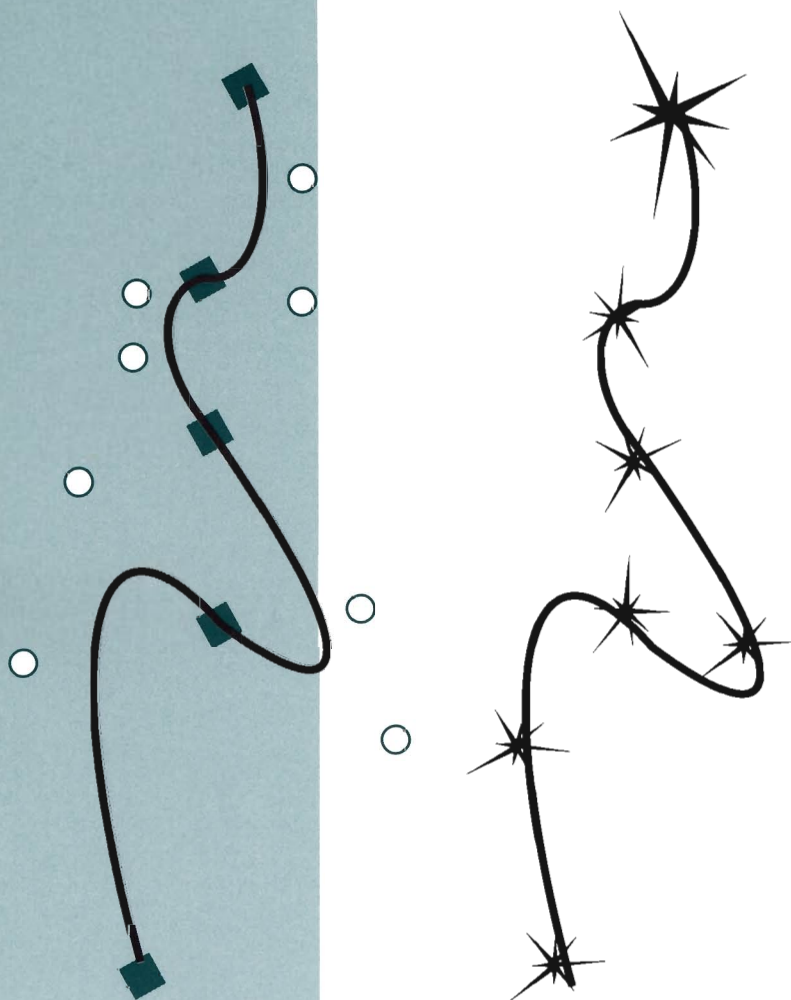
The following is a short example:

```
%%CMYKCustomColor:
10
0.00 0.00 0.00 100.00 Black
0.00 0.00 0.00 0.00 White
100.00 0.00 0.00 0.00 Cyan
0.00 100.00 0.00 0.00 Magenta
0.00 0.00 100.00 0.00 Yellow
0.00 100.00 100.00 0.00 Red
100.00 0.00 100.00 0.00 Green
100.00 100.00 0.00 0.00 Blue
100.00 100.00 41.57 0.00 Navy
15.69 15.69 72.55 0.00 Olive
```

Colors are also added when an illustration is opened or placed in the window. All colors in the color palette of the illustration will be added to the current color palette except for duplicates.



Working with Paths





Chapter 4: Working with Paths



i The *Object* and *Edit Points* tools are used to switch between the two toolbox modes. The *Object* tool allows you to edit objects, while the *Edit Points* tool is for editing path points.

i You do not need to select the *Object* tool before selecting the *Edit Points* tool if you have just drawn an object and it is already selected. Just select *Edit Points* and edit the path points.



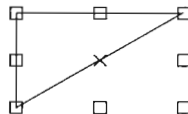
You can change an object's path by using the *Edit Points* tool. This allows you to edit the path of an object instead of the object itself. The size handles used with the *Object* tool will disappear and be replaced by *point* and *curve handles*. You can add, delete, move and align points, or even convert lines to curves and curves to lines.



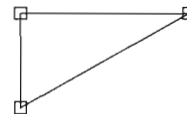
The lower part of the toolbox contains the *Point* tools. You must first select one object with the *Object* tool before using these. Choose the *Edit Points* tool while the object is selected. Only one object's path can be edited at once. The upper part of the toolbox will ghost out, except for the *Object* and *Magnify* tools.



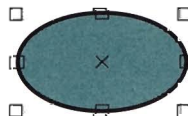
Selecting the *Edit Points* tool essentially switches program modes. You cannot move an object with the *Edit Points* tool, nor can you move a point with the *Object* tool. Objects have size handles to resize them; paths have point and curve handles for reshaping.



A box selected with the *Object* tool. Size handles are placed at the corners and mid-points of the sides.



A box selected with the *Edit Points* tool. Point handles are placed at each path point.



An ellipse selected with the *Object* tool. Size handles are placed at the corners and midpoints of the outline.



An ellipse selected with the *Edit Points* tool. Point handles are placed at each path point and curve handles are placed between path points.

Switching Objects



While only one object's path can be edited at once with the *Edit Points* tool, you can switch objects with a mouse and key combination. Click on the path (a segment) of another object while holding down a *Shift* and an *Alternate* key. The new object will be selected and its point and curve handles will be displayed.

You cannot select two objects for editing simultaneously.



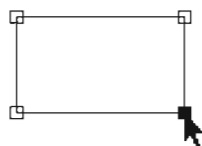
Shift / Alternate / Click to select another object path to edit with Edit Points.

Working with Point Handles

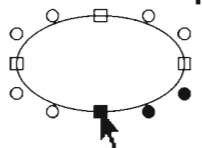
Once you have selected the *Edit Points* tool, you can select an object's points with its point handles. Selecting a point handle allows you to move or delete the point, and to change its segment from a line to a curve or vice versa.

Selecting Point Handles

To select a point handle, click on it with the mouse pointer.



Selected point handles are solid.



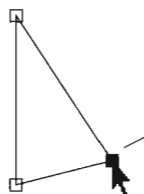
The curve handles associated with a selected point handle will also turn solid.

i A marquée box is a rubberband box drawn around points or objects to select them.

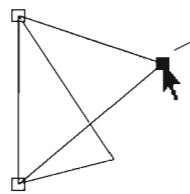
Multiple points can be selected simultaneously by holding down a *Shift* key and clicking on each point handle. Alternatively, a marquée box may be drawn around the desired handles to select them.

Moving Point Handles

To move a point, simply drag its point handle with the mouse pointer and release it at another position.



Select a point handle



Drag the point handle

The steps to move a path point are:

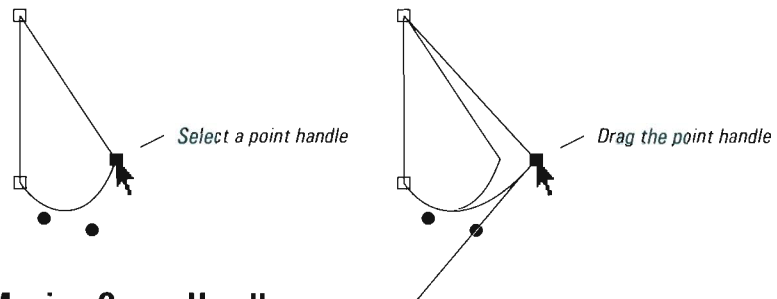
1. Select the point to move.

Select a point to move with the *Edit Points* tool by clicking on its point handle.

2. Drag the point to another position.

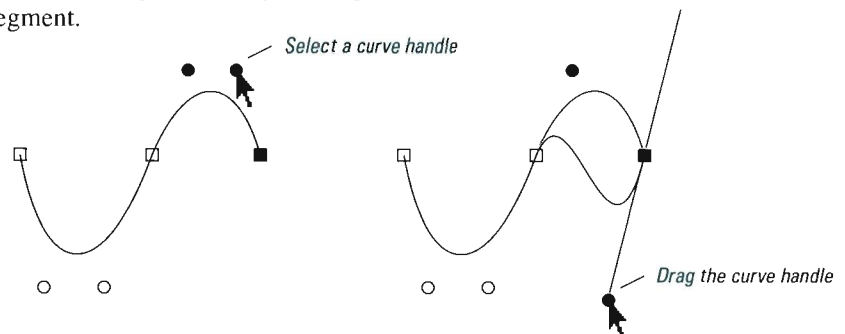
Press the left mouse button and drag the point handle to a new position. Art Expression will redraw the line or curve segment as you drag the point handle. Release the mouse button to redraw the path in its new shape.

If the point handle is the start of a curve segment, a reference line will be drawn from the point handle to the curve handle. This will help you determine the relationship between the curve handle and the point's new position.



Moving Curve Handles

You can reshape curves by moving the curve handles associated with a curve segment.



The steps to reshape a curve segment are:

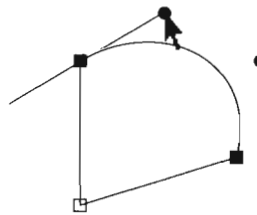
1. Select the curve to reshape.

Select the curve segment to reshape with the *Edit Points* tool by clicking on a point handle.

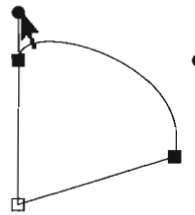
2. Drag a curve handle to another position.

Select a curve handle to move and position the mouse pointer over it. Drag the handle to a new position. Art Expression will redraw the curve segment as you drag the curve handle. Release the mouse button to redraw the path in its new shape.

Tip: To get a smooth transition from a curve to a line segment, you should align the reference line of the curve with the line. If this changes the shape of your curve too much, add another small curve segment between the curve and the line and use it as a connector segment for a smooth transition.



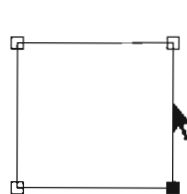
Select a curve handle



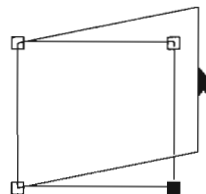
*Align the reference line
with the straight line for a
smooth transition*

Moving Segments

You can move an entire segment and the points at each end of the segment rather than moving each point separately.



*Select a segment
to move*

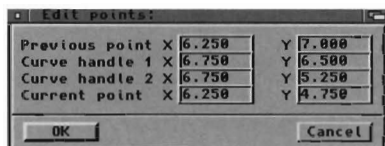


*Drag the segment to
a new position*

You can also move multiple segments by selecting additional segments and then moving any of them.

Editing Points

You can edit the coordinates of a selected point and its associated curve handles (if applicable). This allows you to position a point numerically instead of visually. To edit the coordinates of a point, select it with the mouse pointer. Hold down a *Shift* key and click on the *Edit Points* tool to open the *Edit Points* requester.



The coordinates for the selected point are shown in the bottom text gadgets in the requester. The coordinates for the previous path point are shown at the top. This is important for curves because a curve segment is drawn from the previous point to the current point. The coordinates for the two curve handles are shown if a point associated with a curve segment is selected.

The steps to edit the coordinates of a point are:

1. Select the point to edit.

Select the point to edit with the *Edit Points* tool by clicking on a point handle.

2. Shift click on the Edit Points tool.

Hold down a *Shift* key and click on the *Edit Points* tool to open the *Edit Points* requester.

3. Enter new values for the coordinates to change.

The coordinates are measured from the ruler origin, or zero point, which is in the bottom left corner of the page. Positive values are above and to the right of the ruler origin. Negative values are below and to the left of the origin.

Points (and curve handles) have horizontal (X) and vertical (Y) positions. Enter new values for the coordinates to change.

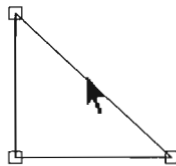
4. Click on OK.

Click on the *OK* gadget to close the requester. The handles will be moved to the new coordinates.

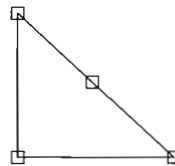
Adding and Deleting Points

Adding Points

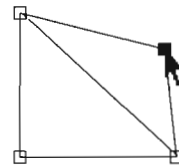
After you have drawn a path, you may want to add points to alter its shape. Points can be added anywhere on a selected path. Points added to a line segment will subdivide the segment into two line segments. Points added to a curve segment will subdivide it into two curve segments.



Click on a segment while holding down *Alt* to add a point



The point appears



Drag the new point to alter the path's shape

The steps to add a point to a path are:

- 1. Hold down *Alt* while clicking on a path.**

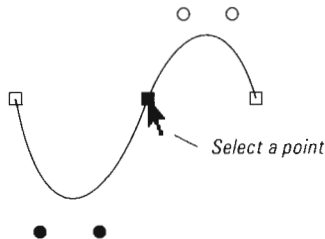
Click anywhere on a path with the *Edit Points* tool while holding down the *Alt* key. A new point handle will appear at the mouse pointer's position.

Deleting Points

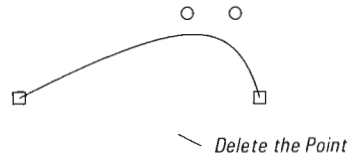


Sometimes you may want to remove points to reshape a path. Deleting points is easy to do with the *Delete Points* tool. To delete a point, select it and choose the *Delete Points* tool.

i You can press the *Del* key to delete a point instead of clicking on the *Delete Points* tool.



Select a point



Delete the Point

If you delete a point in the middle of a path, its segment will be removed and the adjacent points will be joined. You can delete the endpoint and its segment will be removed, but you cannot delete the start point of a path unless all other points have been deleted.

If all the points in a path are deleted, the object will be deleted and Art Expression will switch automatically to the *Object* tool.

Removing points never opens or closes a path, but simply removes a segment from the path.

The steps to remove a point from a path are:

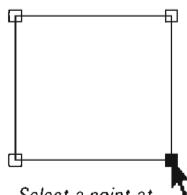
- 1. Select the point to remove.**
Select the point to remove with the *Edit Points* tool by clicking on a point handle.
- 2. Delete the point with the Delete Points tool.**
Click on the *Delete Points* tool or press the *Del* key to remove the point.

Splitting and Joining Points

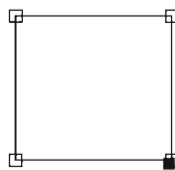
Splitting Points



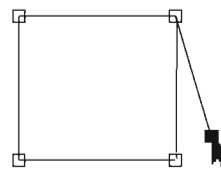
You can open a closed path at any point, or split an open path into subpaths. The *Split Points* tool changes a selected point into two endpoints. You can then move the two points to new positions.



Select a point at which to split the path



A second point will appear slightly offset from the first



Drag the new point to another position to see the opened path

The steps to split a path point are:

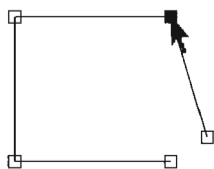
- 1. Select the point at which to split the path.**

Select the point with the *Edit Points* tool by clicking on a point handle.

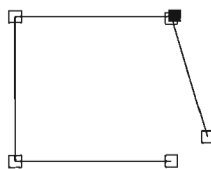
- 2. Choose the *Split Points* tool.**

Click on the *Split Points* tool to split the path at the selected point. Art Expression will create a new endpoint at the selected path point.

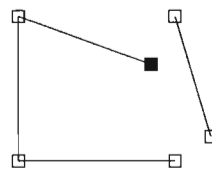
Paths can be split into two or more *subpaths* by continuing to split points. Subpaths are still part of the overall path, but are not connected by segments.



Select a point on an open path at which to split the path



A second point will appear creating two sub-paths



Drag the new point to another position to see the opened path

When you select the *Object* tool, size handles will appear around all the subpaths, not each individual subpath. This is because they are all part of the same object.

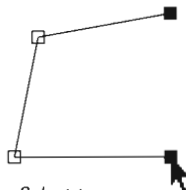
i You can separate sub-paths into completely separate paths with the *Split Paths* command.

Joining Points

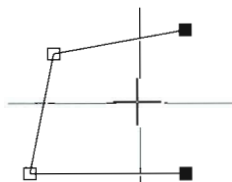
i You cannot join the endpoints of different paths. This can be accomplished after first merging the paths with the *Merge Paths* tool to make both paths into subpaths of the same path.



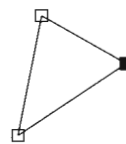
You can join two endpoints with the *Join Points* tool. You can join the endpoints of a path or subpath to close it, or two endpoints from different subpaths of the same path to join them into one path. You cannot join a point in between two segments to another point.



Select two endpoints to join



Use the full screen drawing crosshairs to select a point to join the endpoints



The two endpoints will be replaced with a new pathpoint

The steps to join two endpoints are:

i You can only join two points with the *Join Points* tool.

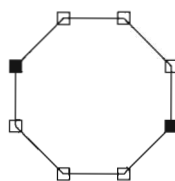
- 1. Select two endpoints to join.**
Select two endpoints with the *Edit Points* tool by clicking on their point handles.
- 2. Choose the Join Points tool.**
Full-screen drawing crosshairs will appear when you click on the *Join Points* tool.
- 3. Select the position at which to join the endpoints.**
Use the crosshairs to select a position at which to join the endpoints. Click the left mouse button at the position and the points will be joined.

Aligning Points

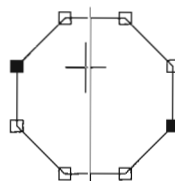
You can align two or more selected points with the *Edit Points* tool. Points can be aligned along vertical, horizontal or both axes.

Vertical Axis Alignment

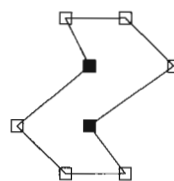
To align points along a vertical axis, select the points and then press the “v” key. A vertical line will appear to help you choose a horizontal position for the points without changing their vertical position. Click the mouse to align the points.



Select two or more points



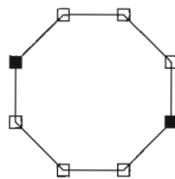
Press “v” to align along a vertical axis



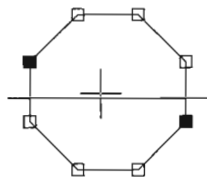
The points will be aligned

Horizontal Axis Alignment

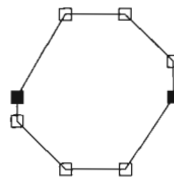
To align points along a horizontal axis, select the points and then press the “h” key. A horizontal line will appear to help you choose a vertical position for the points without changing their horizontal position. Click the mouse to align the points.



Select two or more points



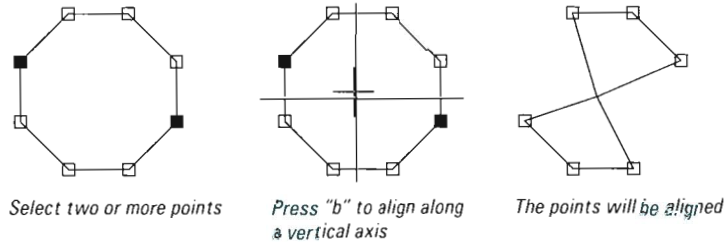
Press “h” to align along a horizontal axis



The points will be aligned

Both Axes Alignment

To align points along both axes, select the points and then press the “b” key. Full-screen crosshairs will appear to help you choose a horizontal and vertical position for the points. Click the mouse to align the points. Note that the points will not be joined, only aligned to the same position.



If an even number of points are aligned, the point handles will not be visible because they will cancel each other out when displayed. However, all selected points remain selected after alignment.

The steps to align points are:

1. Select the points to align.

Select two or more points to align with the *Edit Points* tool by clicking on a point handle.

2. Select the axis to which to align the points.

Press “h” to align points along a horizontal axis, “v” to align points along both axes, or “b” to align points along both axes.

3. Align the points.

Position the crosshairs and click the left mouse buttons to align the points.

Converting Lines and Curves

The *Line to Curve* and *Curve to Line* tools allow you to convert previously drawn segments. You can convert selected line segments to curves and vice versa with these two tools.

Line to Curve



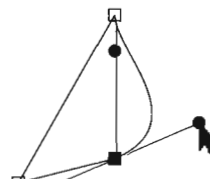
The *Line to Curve* tool is used to change selected line segments to curve segments.



Select a line segment



Choose the Line to Curve tool



Reshape the curve

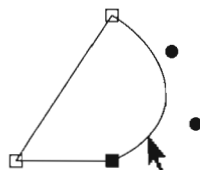
The steps to convert a line segment to a curve are:

- 1. Select the line segment to convert.**
Select a line segment with the *Object* tool by clicking on the line segment.
- 2. Choose the Line to Curve tool.**
Click on the *Line to Curve* tool to convert the line segment into a curve. Two curve handles will appear on the line, but it will remain straight until you reshape the curve.

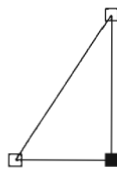
Curve to Line



The *Curve to Line* tool is used to change selected curve segments to line segments.



Reshape the curve



Choose the Curve to Line tool

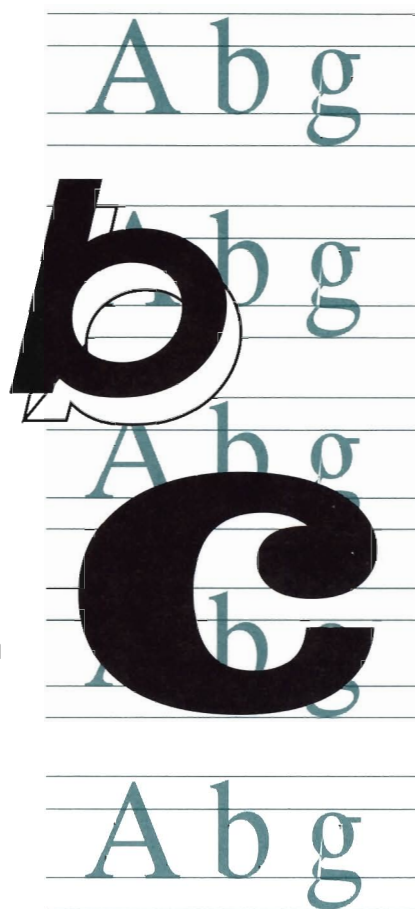
The steps to convert a curve segment to a line are:

1. Select the curve segment to convert.

Select a curve segment with the *Object* tool by clicking on the curve segment.

2. Choose the Curve to Line tool.

Click on the *Curve to Line* tool to convert the curve segment into a line. The curve will disappear and will be replaced by a straight line joining the two point handles.



5

Working with Text



Chapter 5:

Working with Text

Text Basics

Art Expression allows you to use type in an illustration in many different ways. You can change and scale fonts in the same manner as a desktop publisher. Because text is treated the same as other objects, you can rotate, flip, distort or transform text. Art Expression also offers several special text effects such as text on a curved path and text in a shape.

Fonts, Typefaces and Styles

Art Expression refers to fonts as a combination of the typeface and style. Typeface refers to the design of a family of type. Times and Helvetica are examples of typefaces. Style refers to the appearance of the font. Italic and Bold are examples of styles. In Art Expression, the combination of Times (a typeface) and Bold (a style) is Times Bold (a font).

Types of Fonts

There are many different types of fonts available for computers. The majority are available in PostScript Type 1 format, a standard created by Adobe Systems, Inc. PostScript fonts were originally designed to be used with PostScript compatible laser printers. Art Expression avoids this limitation and allows you to print PostScript fonts to any type of printer.

PostScript fonts have several files but Art Expression only requires the Printer Font Binary (PFB) file. There are two common formats of PFB files: Macintosh and MS-DOS. The Amiga uses the MS-DOS format. If you want to use a font originating on a Macintosh computer, it must be converted to MS-DOS format before using it with Art Expression.

i Only PostScript Type 1 fonts may be used with Art Expression. Other fonts such as Compugraphic Intellifonts and PageStream DMF may not be used.

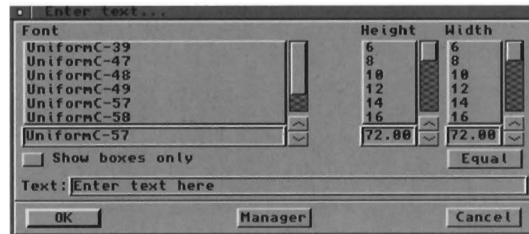


5.2 Working with Text

Creating a Text Object

i PageStream Users: **A** There is a major difference between the Art Expression and PageStream font requesters. PageStream combines the fonts in all the paths in the manager to present you with one listing of fonts. Art Expression's *Enter Text...* requester shows only the fonts in the currently selected path. To see fonts in another path you must change paths in the font manager.

All type used in Art Expression starts as a text object. To place a text object in an illustration select the *Text* tool (*t*) from the toolbox. This will open the *Enter Text...* requester which allows you to select the font, text height, text width and the text to enter.



The left scrolling list selector allows you to choose a font from the displayed list. Only fonts in the currently selected font path will be displayed in the font selector. Alternatively, you can type the name of a font in the text gadget below the selector. Font names are case sensitive.

i You are not limited to the sizes in the size selectors; these simply provide access to several commonly used text sizes.

Text sizes are always measured in *points*. A point is defined as 1/72 of an inch. You can specify type in sizes from 0.01 to 183,000 points in increments of 0.01 points. The height and width may be selected independently. The two scrolling list selectors on the right are used to select a font size. Alternatively, you can type height and width values into the text gadgets below the selectors.



If you want to select equal horizontal and vertical sizes you can select the same value from each selector, enter equal values into the text gadgets, or specify the height only and then click on the *Equal* gadget. This gadget makes the width equal to the height.

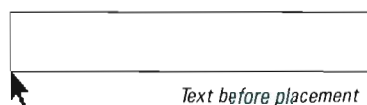
Five



Text is entered with standard Amiga keystrokes. See Appendix B for instructions on entering accented and special characters.

The text to be placed in the illustration is entered in the *Text*: text gadget. Text objects can contain up to 127 characters which should be sufficient for most illustration applications. Longer bodies of text should be created in a desktop publisher and combined with an illustration. Text objects are single lines of type only, but multiple text objects can be positioned together manually.

After you enter the text string, click on *OK* to close the requester. If the font has not been previously used in the current session, Art Expression will load it from disk. When the text is ready for placement, the mouse pointer will appear with a box indicating the space needed for the text. Position the box anywhere in the visible workspace and click on the page with the mouse.

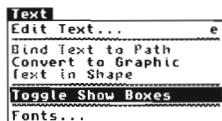


Text before placement



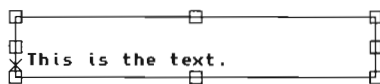
Text after placement

Display Text as Boxes



The *Show Boxes Only* checkbox gadget is used to turn off the display of text. When *Show Boxes Only* is toggled on, text objects will be shown as a box to speed up the screen display. Each text object may be shown as boxes or text independently. You can change the display state of a text object at any time with the *Toggle Show Boxes* command from the *Text* menu. This command affects selected text objects only.

If the text object is too small to display the system font description of its contents, a hashed box will be shown instead.

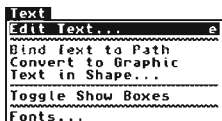


Text displayed as boxes



Text displayed as hashed box

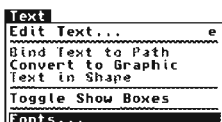
Editing Text



It is easy to edit text once it has been placed in the illustration window. Select the text object to edit and then choose the *Edit Text...* command (*e*) from the *Text* menu.

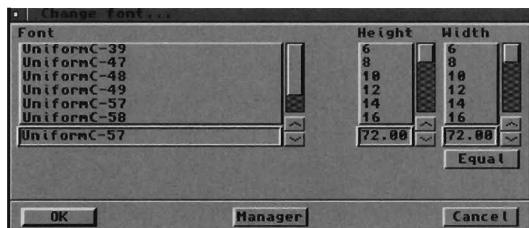
This will open the same requester used to create the text object with the current text already entered. You can change the font or size, or change the text itself.

Changing Fonts



The font of a single text object may be changed with the *Edit Text...* command, but for multiple text objects you must use the *Fonts...* command from the *Text* menu.

The *Fonts...* command opens a requester similar to the *Edit Text...* requester. It allows you to change the font and size of multiple or single objects. It does not have a *Text:* gadget for entering or editing text, or a *Show Boxes Only* checkbox gadget so as not to change the contents or state of each selected object.

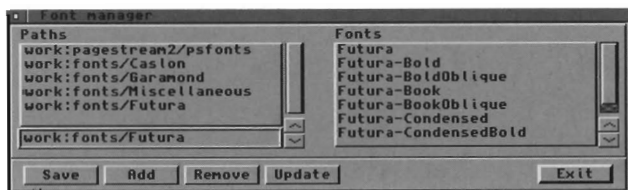


The *Fonts...* requester shows the current font and path, not the font used in each text object, since the fonts of each text object may be different.

i PageStream Users: There is a major difference between the Art Expression and PageStream font requesters. PageStream combines the fonts in all the paths in the manager to present you with one listing of fonts. Art Expression's *Enter Text...* requester shows only the fonts in the currently selected path. To see fonts in another path you must change paths in the font manager.

Managing Fonts

Art Expression allows you to use fonts stored on any floppy disk or hard drive with its font manager. The *Font Manager* requester is opened by selecting the *Manager* gadget in the *Enter Text...* requester, the *Manager* gadget in the *Edit Text...* requester, or the *Font Path Set...* gadget in the *Defaults...* requester.



The *Font Manager* requester is composed of two parts. The *Paths* selector on the left is used to select, add, delete and update font paths. The *Fonts* scrolling list on the right displays the fonts in the selected font path.

Selecting Font Paths

When you first install Art Expression, the font manager will have only one path: `DeviceName:ArtExpression/AEfonts`. (Floppy disk users will have two paths, `AEFonts1:` and `AEFonts2:`, since the fonts will be split over two disks.) If you select this path in the *Paths* selector, Art Expression will list its fonts in the *Fonts* selector.

Updating Font Paths

If you change the fonts in a directory you must update the font list in Art Expression. Select a path from the *Paths* selector and then choose the *Update* gadget. Art Expression will rebuild the fontlist in that directory.

Adding Font Paths

Additional font paths may be added at any time with the *Add* gadget. Choosing the *Add* gadget will open a file requester to select a font path. Direct the file selector to the desired directory containing fonts and choose the *OK* gadget. You do not need to click on the fonts in the path before choosing *OK*; simply leave the *File* text gadget empty.

Art Expression will add the path to the list in the left selector after constructing a list of its fonts. The fonts in the path will be shown in the right selector. A file called `Æfontlist` will be created in the directory to quickly direct Art Expression to the required files.

This feature allows you to store fonts anywhere on your drive and to share fonts between applications without duplicating the files in separate directories.

Removing Font Paths

Font paths can be removed from the list when they are no longer required. To remove a font path, select a path from the *Paths* selector and then choose the *Remove* gadget. The path will be removed from the lists of paths. This function does not delete the fonts from your disk, but simply removes the path from the list of available font paths.

Saving Font Paths for Future Use

You can save your font path setup for future use with the *Save* gadget. *Save* makes the current font path setup the default. The next time you load Art Expression, the fonts in the saved paths will be available for use. If you do not select *Save*, the paths will be restored to their previous saved state when you next use Art Expression.

Manipulating Text

 See the section on *Changing Text to Graphics* later in this chapter.

Text objects can be manipulated in the same manner as other objects. They can be moved, resized, rotated, flipped, copied and transformed like other objects. They are limited in some respects, though. You cannot skew text objects, set their rotation points or blend text objects. To completely manipulate text as an object you must first convert the text to graphics.

TEXT OBJECT

Original text object

TEXT OBJECT

Rotated

TEXT OBJECT

Flipped horizontally

TEXT OBJECT

Flipped vertically

TEXT OBJECT

Resized horizontally smaller

TEXT OBJECT

Resized vertically smaller

 See *Lines and Fills* and *Color* in Chapter 3 for more information on changing the attributes of text objects.

The *Line/Fill...* command may be used to change the fill and line attributes of text.

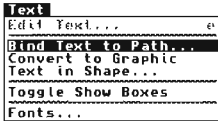
TEXT OBJECT

50% fill, green color, no line style

TEXT OBJECT

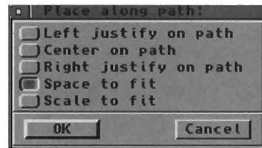
Original text object

Binding Text to a Path

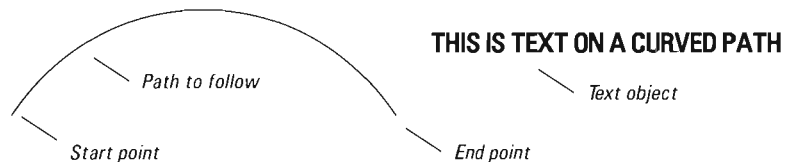


Text normally follows a straight baseline. Although it can be rotated, the baseline cannot be curved. With Art Expression, you can bind text objects to curves or any shape with the *Bind Text to Path...* command from the *Text* menu.

The *Bind Text to Path...* command opens a requester with the five formatting options:



Text is always bound to a path by its baseline. This means that descenders of lowercase characters can protrude below the path. Text can be left or right justified to a path's start and end point, centered between them, spaced to fit or scaled to fit. This means that the direction in which a path is drawn is very important because text will always follow a path from its start point to its end point.



Once you have selected a formatting option and chosen the *OK* gadget, Art Expression will ask you if you want to delete the original text object and/or path. The text will be redrawn on the curved baseline when you have made your selections.



Five

i Paths drawn left to right are most useful for creating logos.

THIS PATH WAS DRAWN LEFT TO RIGHT
THIS PATH WAS DRAWN RIGHT TO LEFT

i Once text has been bound to a path it cannot be edited as text since it is converted to objects. Do not erase the original text object and path until you are sure you have the desired effect.

The steps to bind text to a curved path are:

- 1. Draw a path for the text to follow.**
You will normally want to draw an arc, curve, ellipse or series of curves.
- 2. Create a text object.**
The best results are created with uppercase text. If you plan to use *Left Justify*, *Center*, *Right Justify* or *Space to Fit*, ensure the text object is the correct size before binding it to the path. If you plan to use *Scale to Fit*, you can create the text object at any size.
- 3. Select both the path to follow and the text object with the Object tool.**
- 4. Choose the Bind Text to Path command.**
A requester will open to select a justification option. Click on *OK*. You will be prompted if you want to erase the original text and original object. Select *Yes* or *No* as appropriate.

Text bound to a path will be converted automatically to graphics. Each character will become a separate object which can be edited individually. All the characters will remain selected after binding text to a path for easy grouping.

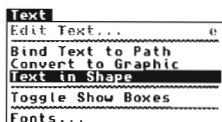
You can bind text to any path in Art Expression, even straight paths. Combined with the *Space to Fit* option, this is a useful way to create character spacing greater than the default.

This text is distributed on a path.

This text is distributed on a path.

The text object at the top was bound to the straight line to space out its characters.

Placing Text in a Shape



Art Expression can place text inside a closed path and warp the text to fit the shape of the path. The *Text in Shape...* command opens a requester which offers X, Y or X/Y warping.



i Once text has been placed in a shape it cannot be edited as text since it is converted to objects. Do not erase the original text object and shape until you are sure you have the desired effect.

Warp X Only reshapes text horizontally to fit the vertical curves of a shape. *Warp Y Only* reshapes text vertically to fit the horizontal curves of a shape. *Warp X and Y* reshape text in both directions to fit a shape.

Text in Shape... normally creates curve segments as required. For some fonts and text warping situations, you may prefer that curves be flattened into a series of lines. Toggle on the *Flatten Curves* checkbox gadget when this is required. It is recommended that *Flatten Curves* be used for X and X/Y warping.



Closed path shape

SHAPE

Text object



Example of X warping



Example of Y warping

Once you have selected the warping axes and have chosen the *OK* gadget, Art Expression will ask you if you want to delete the original text object and/or path. The text will be redrawn in the shape when you have made your selections.

The steps to place text in a shape are:

1. Draw a shape in which to place the text.

You will normally want to draw a circle, ellipse or polygon, but any closed path may be used.

2. Create a text object.

The best results are created with uppercase text. Lowercase characters with ascenders and descenders may make their neighboring characters appear to be warped incorrectly.

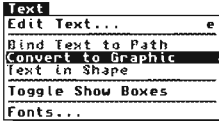
3. Select both the closed path and the text object with the Object tool.

4. Choose the Text in Shape... command.

A requester will open to select warping axes. Click on *OK*. You will be prompted if you want to erase the original text and original object. Select *Yes* or *No* as appropriate.

Text placed in a shape will be converted automatically to graphics. Each character will become a separate object which can be edited individually. All the characters will remain selected after placing text in a shape for easy grouping.

Changing Text to Graphics



For more information on composite paths, refer to *Composite Paths* in Chapter 7.



A counter is a closed hole in a character.

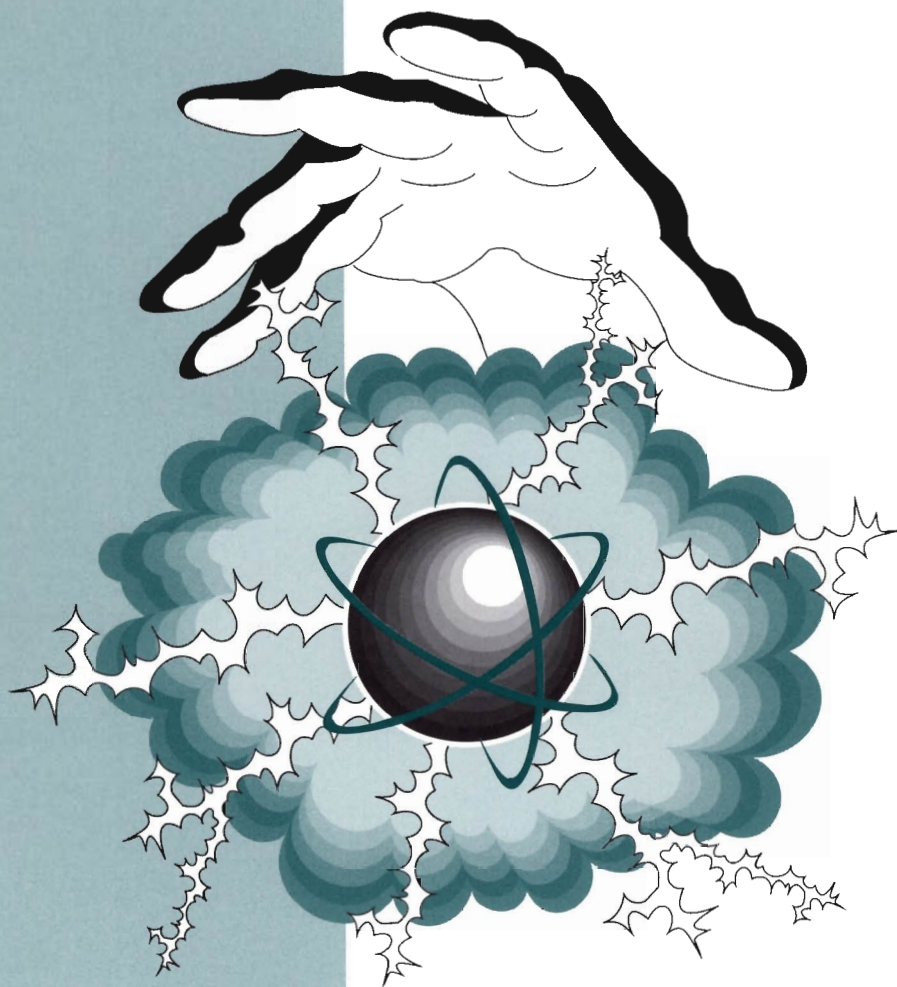
You must convert text objects to graphic objects before you can manipulate them completely. The *Convert Text to Graphics* command from the *Text* menu will change selected text objects into composite and simple objects. Composite objects have more than one closed path merged together. Simple objects have a single path only. Characters such as “O” and “A” will be converted to composite paths since their counters are transparent holes. Characters such as “T” and “E” will be converted to simple paths since they do not have counters.

When text has been converted to graphics, you can manipulate each character individually in the same manner as other objects. You can no longer edit the characters with the *Edit Text...* or *Fonts...* commands since the characters are now objects.

The steps to convert text to a graphic are:

1. **Select a text object with the Object tool.**
Select a text object with the *Object* tool. You can select multiple objects by holding down *Shift*.
2. **Choose the Convert to Graphic command.**
Each character of the text object will become a separate single or composite path, depending on whether or not the characters have counters.





6

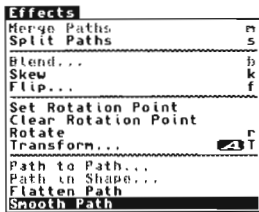
Special Effects



Chapter 6:

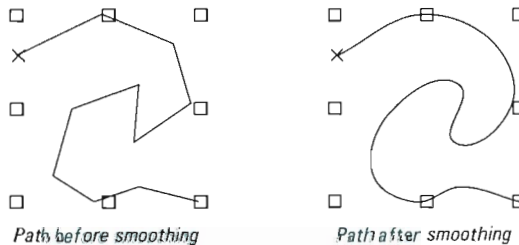
Special Effects

Smoothing Paths



i The *Smooth Path* command affects all the segments of a path. To change selected paths only, convert the required paths to curve segments with the *Line to Curve* tool and then edit the curves manually.

The *Smooth Path* command from the *Effects* menu is used to convert all the line and curve segments in a path to a completely smooth object without discernible connections at its path points. This type of object is also created when you draw with the *Freehand* tool.

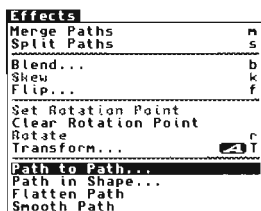


Line and curve segments can be smoothed with the *Smooth Path* command. The curve handles of curve segments which do not make smooth transitions to the next segment are changed to create a perfectly smooth path.

Flattening Paths

The *Flatten Path* command from the *Effects* menu is used to convert all the curve segments in a path to line segments. Curves are changed to true line segments without curve handles.

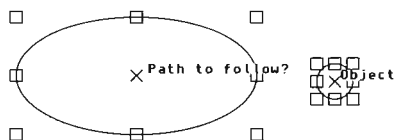
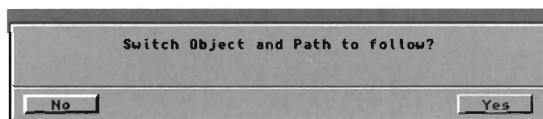
Binding Paths to Paths



The *Path to Path...* command from the *Effects* menu is used to bind a path to another path. It makes copies of an object distributed around another path.

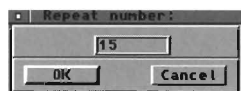
Only two objects may be selected when choosing the *Path to Path...* command. The objects may not be grouped—they must be single objects, but they can be composite objects (merged paths).

The *Path to Path...* command opens a requester to let you decide which path should be followed and which object should be distributed around the path. The selected paths are marked to indicate which the program will use unless you switch them.

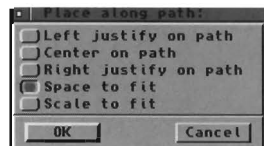


Choose No to continue without changing the path to follow and object to distribute.

Next, Art Expression will open a requester to ask you how many copies of the object should be distributed around the path to follow. Enter the number in the text gadget.



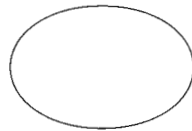
After entering the desired repetition, Art Expression will open a requester with five distribution options.





See *Rotating Objects* in chapter 3 for more information on the *Set Rotation Point* command.

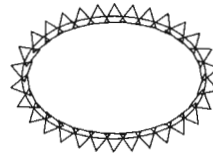
Paths are always bound to other paths by their rotation points. You can change the rotation point of a path before binding it to another with the *Set Rotation Point* command.



Path to follow



Path to distribute

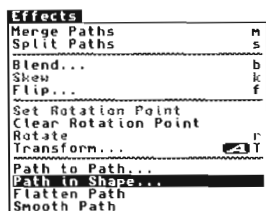


30 copies, spaced to fit

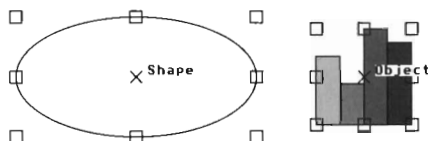
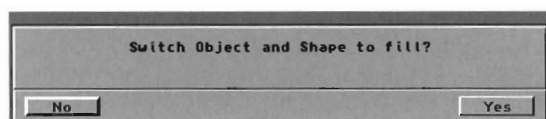
The steps to bind a path to another path are:

- 1. Draw a path to follow.**
Draw any type of path with any drawing tool.
- 2. Draw the path to distribute.**
Draw any type of path with any drawing tool.
- 3. Select both the path to follow and the path to distribute with the Object tool.**
- 4. Choose the Path to Path... command.**
A requester will open to switch the path to follow and the object to distribute. Click on *Yes* or *No*.
Another requester will open to set the number of copies to make. Enter a number and click on *OK*.
Another requester will open to select a justification option. Choose one and click on *OK*.

Placing a Path in a Shape

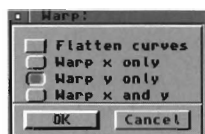


Art Expression can place a path inside a closed path and warp it to fit the shape of the closed path. The *Path in Shape...* command opens a requester to let you decide which of the selected paths should be filled with the other. The selected paths are marked to indicate which the program will use unless you switch them.



Choose No to continue without changing the shape to fill and the object to fill it with.

Next, Art Expression will open a requester to select X, Y or X/Y warping.



Warp X Only reshapes a path horizontally to fit the vertical curves of a shape. *Warp Y Only* reshapes a path vertically to fit the horizontal curves of a shape. *Warp X and Y* reshapes a path in both directions to fit a shape.

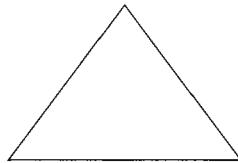
Path in Shape... normally creates curve segments as required. For some warping situations, you may prefer that curves be flattened into a series of lines for better results. Toggle on the *Flatten Curves* checkbox gadget when this is required.

Once you have selected the warping axes and chosen the *OK* gadget, Art Expression will draw the warped path in the shape.

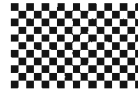


For more information on merging paths, refer to the *Composite Paths* section later in this chapter.

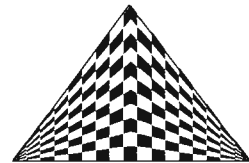
Only a single object may be placed in another shape; groups cannot be placed in a shape. You can merge multiple objects together to form a composite path. A composite path is treated as a single object so it can be placed in a shape. The example below demonstrates a practical example of merging objects before using the *Text in Shape...* command.



Closed path shape



Path to place



Example of Y warping

The steps to place a path in a shape are:

1. Draw a shape in which to place the path.

You will normally want to draw a circle, ellipse or polygon, but any closed path may be used.

2. Draw a path to place in the shape.

Draw any type of path with any drawing tool.

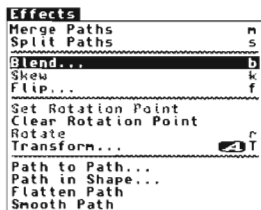
3. Select both the closed path shape and the path to place in the shape with the Object tool.

4. Choose the Path in Shape... command.

A requester will open to switch the shape to fill and the object to fill it with. Click on *Yes* or *No*.

Another requester will open to select the warping axes. Choose one and click on *OK*.

Blending Objects



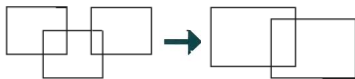
Art Expression can blend two objects together with the *Blend...* command from the *Effects* menu by creating intermediate shapes and colors. Objects can be blended to morph from one color, shape and/or line weight to another.

Objects to be blended must be ungrouped, although they can be merged. The best results are achieved when using similar objects. If the objects are too dissimilar, they cannot be blended. For example, you cannot blend an unstroked, unfilled object with one that is stroked and filled; their attributes are incompatible. Line style, cap and join attributes cannot be blended since they are finite styles without any possible intermediate steps. However, you can blend an open path with a closed path, but all intermediate steps will be open paths. Text cannot be blended unless it is first converted to graphics and its paths are merged.

Examples of Impossible Blends



You cannot blend a filled object with an unfilled object.



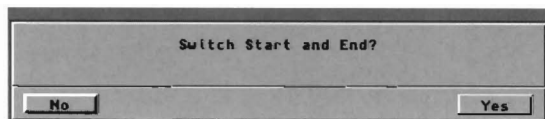
You cannot blend a group of objects, although you can merge them and then blend the composite path with another object. This does not yield good results.

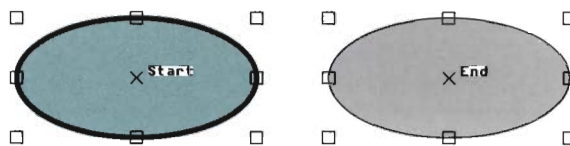
TEXT



You cannot blend text unless the text is converted to graphics and then merged to make a composite object.

The *Blend...* command opens a requester to let you decide which object should be the start of the blend. The start object is important, because the intermediate objects are placed on top of the first object and below the last object. The selected objects are marked to indicate which the program will use unless you switch them.





Choose No to continue without changing the start and end objects

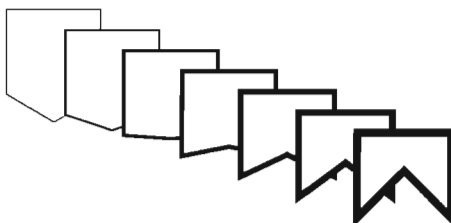
Next, Art Expression will open a requester to ask you how steps should be used in the blend. The number includes the start and end objects. Enter the number in the text gadget. If you enter 3 steps, only one intermediate object will be created.



After entering the desired repetition, Art Expression will create the blend. All the objects in the blend will remain selected. The intermediate objects will be shaped, filled, stroked and colored to morph smoothly from the start to the end object. The colors assigned to the intermediate objects will be unnamed; they will not appear in the color list in order to avoid clutter. If you select an intermediate object and then select the *Line/Fill...* command, it will be listed as unnamed, but you can edit its color components or add it permanently to the color list.

Examples of Blends

Color blend: this is a 40 step blend from 10% to 90%



Line and shape blend: this is a 7 step blend from a line weight of 0.5 to 3 points.

The steps to blend two objects are:

1. Draw two objects.

Draw two objects with any shape or path tools. They should be similar for optimal blending. Apply fill, line and color attributes as required.

2. Select both objects with the Object tool.

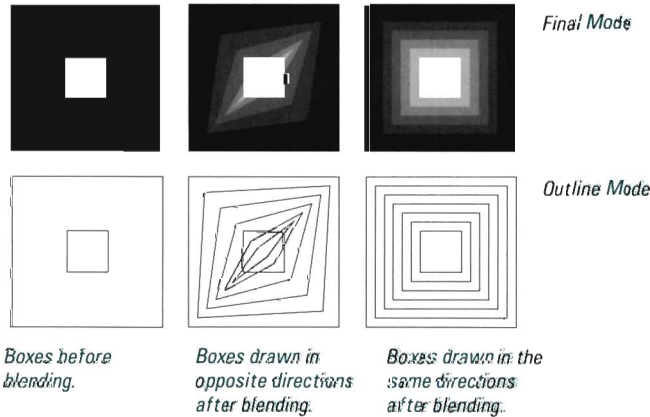
3. Choose the Blend... command.

A requester will open to switch the start and end objects. Click on *Yes* or *No*.

Another requester will open to set the number of blend steps. Enter a number and click on *OK*.

Blend Crossover

Blend crossover is a result of blending objects drawn in opposite directions. If you blend an object drawn in a clockwise direction with one drawn counterclockwise, Art Expression will try to match up the start and end points of the objects and will create an undesirable blend.



i It is fairly easy to find the start point for an open path since there are two end points, but the start point for a closed path is concealed. If you select a closed path with the *Object* tool, then select a path tool, Art Expression will continue drawing from the start point.

You should ensure that both objects were drawn in the same direction before blending. The basic shape tools always draw in a clockwise direction, while the path tools allow you to draw in any direction. You can change a path's direction by flipping it with the *Flip* command.

The startpoint of the objects is also used for blends. The startpoint should be in the same position for each object in order to prevent blend crossover.

Optimal Blends

If you use the *Blend...* command to produce tonal variations, you should calculate the number of blend steps required to avoid *banding*. There are several important factors to consider when blending objects: the printer resolution, the printer screen frequency, the distance between the two objects, and the objects' relative percentage fill and color.

Dot Matrix, Ink Jets and HP Compatible Lasers

If your blend will be printed on a non-PostScript printer, you do not have control over screen frequency. The output resolution will be lower than that of many PostScript devices. Banding is not completely avoidable since there are fewer gray and color levels to work with.

PostScript Printers and ImageSetters

You can use a simple formula to calculate the number of steps for your blend:

$$\text{Number of blend steps} = (\text{resolution/frequency})^2 \times (\text{color change})$$

Resolution is measured in dots per inch. Frequency is measured in lines per inch. If the two objects are grayscales (percentages of black), or tints of another color (percentages of a color), then the color change is equal to the difference between their percentage fills. If the two objects are different colors, then the color change is equal to the difference between the CMYK color component which change the most.

For example, if one object is 10% yellow and 40% magenta, and the other is 20% yellow and 80% magenta, then the color change is 40% because the change in magenta is greater than the change in yellow. Another example: if one object is 80% yellow and 80% cyan, and the other is 40% magenta and 20% cyan, the color change is 80% because the yellow component was reduced to zero.

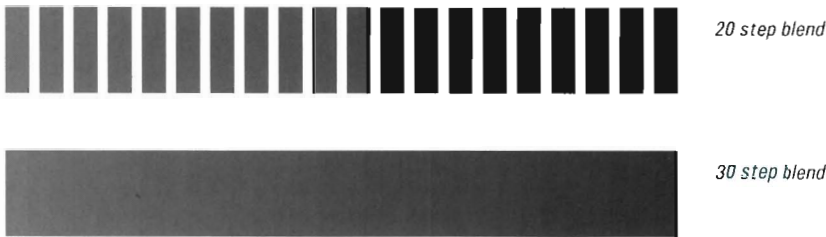
PostScript Limitations

PostScript can only produce 256 levels of gray, or 256 levels of any CMYK color component. Therefore, there is no advantage to creating a blend with more than 256 steps unless you need more steps to blend the shape.

Band Width

Unless you are morphing shapes without tonal variations, the width of the intermediate objects multiplied by the number of objects should be equal or greater than the distance between the original objects. If they are too narrow, gaps will appear between the intermediate objects.

Minimum band width = Distance between objects / Number of blend steps



Common Blend Steps

Some common blend step values are given below. Refer to the formula to calculate the number of steps for other situations.

Rez/Freq DPI/LPI	Color Change (in %)									
	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
300/ 60	3	5	8	10	13	15	18	20	23	25
600/ 60	10	20	30	40	50	60	70	80	90	100
600/ 85	5	10	15	20	25	30	35	40	45	50
1270/ 85	22	45	67	89	112	134	156	179	201	223
1270/100	16	32	48	65	81	97	113	129	145	161
1270/133	9	18	27	36	46	55	64	73	82	91
2540/ 90*	26	51	77	102	128	154	179	205	230	256

* these values can be used for any higher frequency at 2540 dpi because this is the limit of PostScript's tonal variation.

Composite Paths

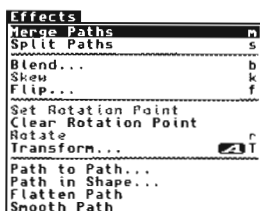
Art Expression allows you to create transparent openings in filled objects by merging two or more paths to make a composite path. The parts of paths which overlap remain unfilled, making holes through which you can see objects below the composite path.

You can use composite paths to mask objects. This permits you to apply interesting “fills” to objects. You may also want to merge paths when putting a path in a shape because multiple objects cannot be placed in a shape unless they are merged.

The paths do not need to be closed, and they do not need to have identical attributes. However, merging paths will give all selected objects the same attributes as the bottom selected object. It is impossible to create a composite path with different colored sub-paths.

Composite paths have many uses and are intrinsic to advanced effects. The main uses of the *Merge Paths* command are:

- to create masks (using transparent holes)
- to create unfilled areas in filled objects for special effects
- to create objects for *Path in Shape*
- to join separate paths into one object



Art Expression has two commands for creating and dissolving composite paths. The *Merge Paths* command from the *Effects* menu merges selected paths into one composite object. The *Split Paths* command from the *Effects* menu splits a composite object into separate objects.

Unlike the *Group* feature, there is only one level of merged paths. If you merge a composite object with another object, they will be merged into one composite object. This is equivalent to having split the paths of the merged object, and then merged its sub-objects with the other object to form a new composite path.

i Text must be converted to graphics before it can be merged with other objects.

Do not confuse *Merge Paths* with *Group*. *Group* merely combines multiple objects for easy editing. *Merge Paths* combines paths into one object which is identical to a single object.

 You must click on the filled part of a merged object in order to select it. Clicking on the unfilled part will not select it, just as if you had clicked in the center of an unfilled box.

The steps to merge two or more objects are:

- 1. Draw two or more objects.**
Draw with any shape or path tools. The line, fill and color attributes of the bottom object will be applied to the composite path, so apply the desired attributes to all the objects, or just to one object which you have sent to the back.
- 2. Select the objects to merge with the Object tool.**
- 3. Choose the Merge Paths command.**
All selected objects will be merged into a composite object.

The steps to split a composite object are:

- 1. Select a composite object with the Object tool.**
Select the object to split. You can select multiple objects by holding down *Shift*.
- 3. Choose the Split Paths command.**
All selected objects will be split into separate objects.

Applying Attributes to Composite Paths

You can apply line, fill and color attributes to composite paths. All the sub-paths in a composite path will be changed to the new attributes. If you toggle on fill styles for the paths, the overlapping parts will be unfilled.

Unlike groups, composite paths may be blended with other objects.

Text and Composite Paths

 For more information on converting text, refer to *Changing Text to Graphics* in Chapter 5.

 A counter is a closed hole in a character.

If you convert text to graphics with the *Convert to Graphic* command from the *Text* menu, composite paths may be created. Characters such as “T” and “E” will be simple paths because they do not have overlapping sections. Characters such as “O” and “A” will be converted to composite paths since their counters are transparent holes.

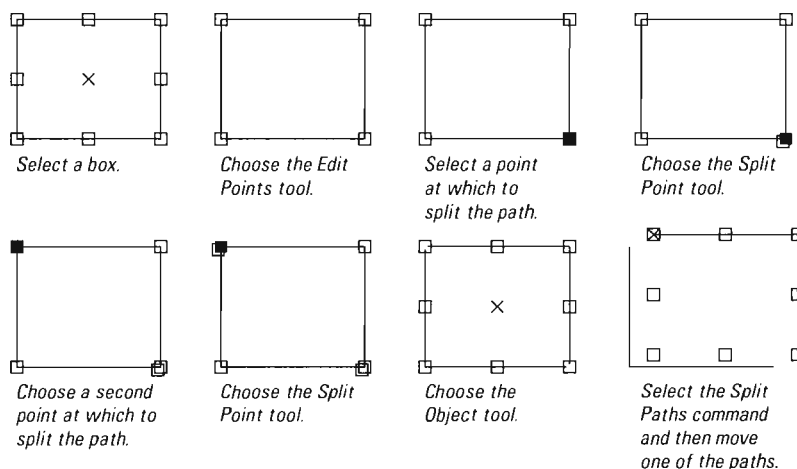
If you split the path of an “O” after converting it to a graphic, you will have a black ellipse on top of another black ellipse. Re-merging them would restore the correct appearance of the “O”. It is important to understand how composite paths are formed in order to use text as graphics effectively.

Joining and Separating Paths with Edit Points

The point editing tools may be used to join the subpaths of a merged path so that they cannot be split. They may also be used to break a single path into subpaths so that it can later be split into separate paths.

In the following example, a box is broken into two separate objects with *Split Paths* and the *Split Points* tool. You can easily combine two objects with *Merge Paths* and the *Join Points* tool.

Example of Splitting a Path



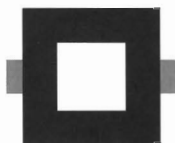
Using Composite Paths

Composite paths have many uses and are intrinsic to advanced effects. Some examples of the *Merge Paths* command are shown below.

Unfilled Areas in Filled Objects

You can easily make an unfilled object in a filled shape by placing a solid white object over the background object. This is a quick solution to many problems, but does not create a transparent hole in the object through which you can see other objects.

The examples below illustrate the differences between merged paths and a simple group of a white and black object.



*White box on black box:
You cannot see through
the white box.*



*Merged path: the hole
created by merging the
paths is transparent.*

This effect can be used for overlapping objects as well.



*The two black boxes overlap to create a transparent hole.
While this effect could be duplicated with two tangent polygons,
this basic example can be used for other purposes as shown below.*



*This text was converted to a graphic,
then merged with the ellipse.*

Path in Shape



For more information on the *Path in Shape...* command, refer to the *Placing a Path in a Shape* section earlier in this chapter.

The *Path in Shape...* command allows you to place an object in another path. This only works with single objects; groups cannot be placed in another shape. This restricts you to simple operations unless you first merge the objects into a single path.



Example of a merged path in a shape.

Masks

One of the most important effects made possible with composite paths is the mask. The transparent overlap of merged paths allows you to “fill” the hole with the objects below the hole. You can create any pattern or blend and stack it below the holes to create the appearance that they are filled.



Create a composite path by merging objects. This text object was first converted to graphics.



Use a composite path as a mask. Place other objects, such as a blend, behind the composite path to “fill” the transparent holes.

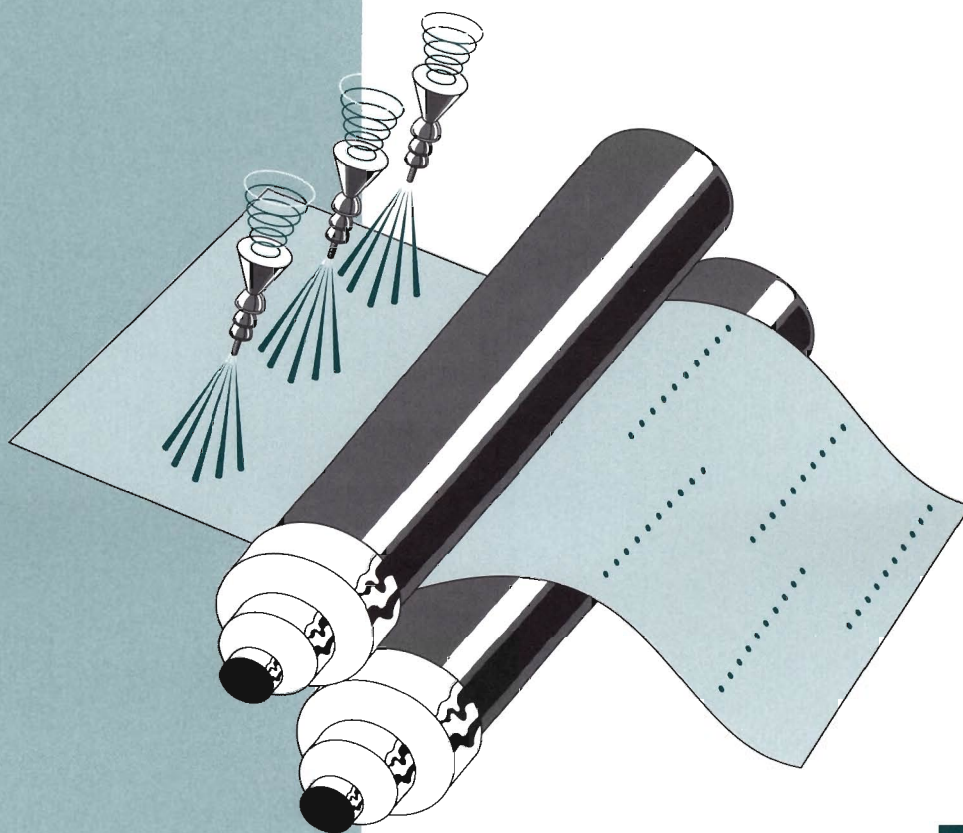
MERGE

Apply a white fill color to the composite path to make it a white mask.

Joining Paths

The *Merge Paths* command can also be used to join two or more paths together. This is similar to grouping objects, but merging them makes them a single path. Merged paths have many advantages over groups. One of the most important advantages is that you can still edit the points of merged paths, while groups must be ungrouped to be edited.





Printing Illustrations

7



Chapter 7:

Printing Illustrations

Printing Your Illustrations

Art Expression can be used to print your illustrations for proofing before importing them into a page layout program, or may be used to create the final output. Art Expression makes printing simple so that creating a quick draft is easy, but also provides sophisticated controls for any type of printing job.

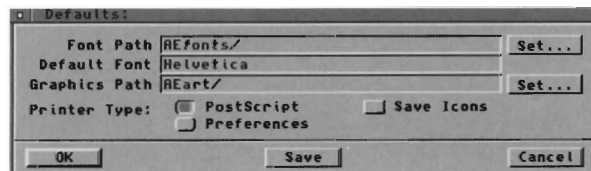
You can print to most types of printers with Art Expression. PostScript printers are supported directly with a custom driver while all other printers are supported via Amiga Preferences drivers. The printer types supported by Art Expression are:

- PostScript laser printers, including color; (using the PostScript driver)
- PostScript imagesetters; (using the PostScript driver)
- Film recorders, including color; (using the PostScript driver)
- Dot matrix printers, including color; (using Preferences drivers)
- Inkjet printers, including color; (using Preferences drivers)
- Hewlett Packard laser printers, including color; (using Preferences drivers)

Selecting a Printer Driver

Before you can print, you must select the custom PostScript driver or the Preferences driver. The *Defaults...* command from the *Settings* menu opens a requester which allows you to select the type of driver. If you use the PostScript driver you can set a default device name if required.

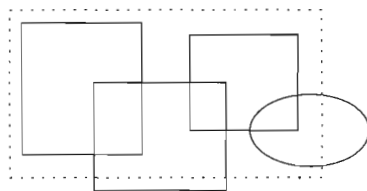
 For more information on setting defaults, refer to the *Program Settings* section in Chapter 1.



Setting the Print Area



Art Expression prints everything inside a user-definable print area. The print area defaults to the page size, but can be set to any size with the *Set Print Area* command from the *Project* menu. Selecting the *Set Print Area* command changes the mouseform to a crosshair. Draw a box with the crosshair to define the area to print.



Only the parts of objects inside the print area will be printed; parts outside the print area will be cropped off.

The steps to define the print area are:

1. Choose the Set Print Area command.

Choose the *Set Print Area* command from the *Project* menu. The pointer will change to a crosshair.

2. Position the mouse crosshair.

Drag the mouse to define the print area. A dashed line box will be drawn from the point at which you start dragging the mouse.

3. Release the mouse button.

The shape will be created after you release the mouse button.

You can change the print area to equal the page size at any time by selecting the *Set Print Area* command while holding down *Shift*.

Note that laser printers cannot print to the edge of the page. On most laser printers, the print area for a 8.5 x 11" page is 8.0 x 10.8".

Printing to PostScript Printers

Art Expression is designed to be used with PostScript printers and can produce excellent results. Before you can print to a PostScript printer you must inform Art Expression what fonts are resident in the printer.

Resident Fonts

Most PostScript printers have 35 PostScript fonts inside the printer's memory. These conform to the standard set by Apple with the LaserWriter Plus. Art Expression uses a file called `ArtExpression.prfonts` to keep track of the printer's resident fonts. This is simply an ascii file stored in the Art Expression support files path which lists the proper PostScript names for your printer. If you are using a printer with the standard 35 fonts, you should never need to change this file since Art Expression defaults to this configuration.

If you have a printer with fonts matching that of the Texas Instruments Microlaser PS17 you should rename the `TMicrolaserps17.prfonts` file to `ArtExpression.prfonts` and delete the original `.prfont` file. If you have a printer with fonts matching the QMS PS410 you should rename the `QMSps410.prfonts` file to `ArtExpression.prfonts`.

You can easily create `.prfont` files for your printer setup or to match fonts which you may download to the printer with a font downloader. You can also create a `.prfont` file to match that of your service bureau's imagesetter. Your printer manual will list the PostScript names of the resident fonts (most printers can print a test page with a list of the resident fonts) and your service bureau can supply you with a list of their fonts.

You can edit the `ArtExpression.prfonts` file in a text editor if required. The format of the file is:

```
%% AEPrinterFontNames      Printer Name
FontName-Weight
FontName-Weight
etc...
```

The following is the `.prfont` file for a Texas Instruments MicroLaser PS17:

i Art Expression only loads the `ArtExpression.prfonts` when the program is launched. If you change this file while the program is running you must quit and reload the program to acknowledge the new setup.

i If your service bureau does not know how to list the fonts in their imagesetter, instruct them to print out the `.PPD` file for the imagesetter. It contains a list of standard resident fonts. More fonts may have been made resident than are listed in the `.PPD` file.

```
%% AEPrinterFontNames      TI MicroLaser PS17
Courier
Courier-Oblique
Courier-Bold
Courier-BoldOblique
Helvetica
Helvetica-Oblique
Helvetica-Bold
Helvetica-BoldOblique
Helvetica-Narrow
Helvetica-Narrow-Oblique
Helvetica-Narrow-Bold
Helvetica-Narrow-BoldOblique
Symbol
Times-Roman
Times-Italic
Times-Bold
Times-BoldItalic
```

Downloaded Fonts

If a font is not listed as resident in the `ArtExpression.prfonts` file, it will be downloaded automatically when you print your illustration. If a font is listed as resident and it is not available in the printer, your printer will substitute Courier. You should ensure that you have the correct fonts listed in the `ArtExpression.prfonts` file.

Memory and PostScript Limitations

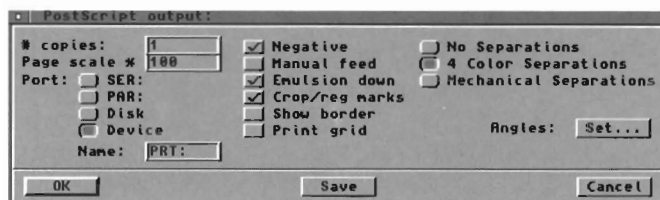
The memory in your printer or your service bureau's imagesetter limits the number of fonts and the complexity of the drawings you are able to print. With 1MB of memory, you will be limited to two to three downloaded fonts. You can conserve memory by converting fonts to graphics before printing. This will decrease the quality of the fonts at very small sizes, but this is not a concern at larger sizes and high resolutions.

If your printer has additional memory, you may be able to print pages more complex than your service bureau's imagesetter can print.

PostScript is limited in printing complex paths. Paths with over 1500 points may not print to a PostScript laser printer and more than 400 points may not print to an imagesetter. Composite paths are considered single paths so merging many objects can create too many segments. The newer PostScript level 2 printers do not have the same limitations as the more common level 1 printers.

Printing

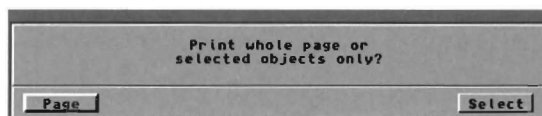
The *Print...* command from the *Project* menu opens a requester to select options for printing the selected print area.



The print options are:

- number of copies
- scale
- port
- negative image
- crop / registration marks
- manual feed
- emulsion down
- show border
- print grid
- color separations
- set angles / frequency

After you have selected the desired options and clicked *OK*, a requester will open if any of the objects on the page are selected. You can choose to print the entire page (within the print area) or only the selected objects.



The steps to print an illustration are:

1. Select the area to print.

If you want to print the entire illustration, set the print area to the entire page. (This is the default.) The print area is shown as a dashed line. If you want to print only a portion of the page, use the *Set Print Area* command to draw a print area box around the desired area.

2. Choose the *Print...* command.

The *Print...* command from the *Project* menu opens a requester to set print options. Select the desired options. Choose the *Set...* gadget if you need to change the color angles and frequencies for four color separations. Click on *OK* when you are done.

3. Choose whether to print the entire page or selected objects.

If any objects are selected, a requester will open to choose whether to print the selected objects only or the entire page within the print area. If no objects are selected, the requester will not appear and Art Expression will immediately print the page.

Print Options

The *Print* requester has several options for printing your illustration.

Copies

This option lets you specify the number of copies of the illustration to print. Enter the number in the text gadget.

Page Scale

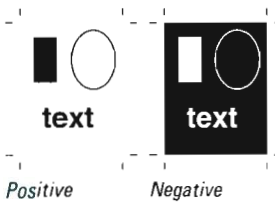
You can enlarge or reduce the page with the *Print* requester. Reduce the scale to print oversized illustrations on regular paper, or to enlarge a small illustration. Valid scale settings are 15% – 65,000%.

Port

The *Print* requester offers four output port selections: parallel, serial, device and disk. Most people connect PostScript printers to the Amiga's parallel port because it is the fastest option. Some PostScript printers do not have parallel ports so you may need to use the serial port. You will have to use Preferences to set the serial port settings. See your printer and Amiga manuals for more information.

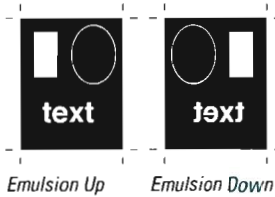
If you are printing to another device you should use the device port. Clicking on the *Device* radio button gadget will unghost the *Name* text gadget. Enter the name of the device into this text gadget. You can set the default device with the *Defaults...* command from the *Settings* menu. If your printer is on a network you can enter the network's printer device in the text gadgets. Examples are `PRT:` and `LSR:`.

If you need to print your illustrations on a PostScript printer not attached to your computer, or to an imagesetter at a service bureau, you can print a PostScript file to disk with the *Disk* radio button gadget. See the *Using a Service Bureau* section later in this chapter for more information.



Negative Image

Use the *Negative* option when you are preparing files for an imagesetter. Check this option to produce a negative image or leave it unchecked to produce a positive image.



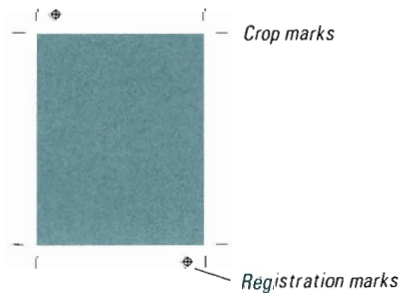
Emulsion Down

Check the *Emulsion Down* option to produce emulsion side down (mirrored), right reading film on an imagesetter. This is the normal setting for producing film on imagesetters. Leave it unchecked to produce emulsion side up, right reading film on an imagesetter. This is the normal setting for printing on paper from a laser printer or imagesetter.

i Ask your service bureau whether you should print negatives or positives. Some imagesetters are setup for negative images.

Crop/Registration Marks

Check the *Crop/Reg Marks* option to print crop and registration marks for your illustration. These marks print outside the print area. Crop marks are used to trim the output to the desired size. Registration marks are used by presses to align color plates for printing. Crop and registration marks require an extra 36 points (0.5 inches) of space on all sides of an illustration.



Art Expression will center your illustration on the paper if the illustration is smaller than the paper. If the illustration is larger than the paper, it will be aligned with the bottom left corner of the paper. Illustrations too large to fit on the paper will be cropped off.

If your illustration is 8.5 x 11 inches (letter), and you print it on 8.5 x 11" paper with crop and registration marks, the top and right half inch of the page will be cropped off because the overall size, including the crop and registration marks, will be 9.5 x 12".

Show Border

Check the *Show Border* option to print a border around the printed area. Leave it unchecked to print the page normally.

Print Grid

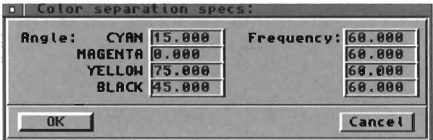
Check the *Print Grid* option to print the screen grid. This is useful for architectural plans and anything in which the grid acts as a scale.

Separations

Check the *No Separations* option to print the page in monochrome (gray-scales). Check the *4 Color Separations* option to print cyan, magenta, yellow and black separations. Check the *Mechanical Separations* option to print a separation for each color used in the illustration.

Set

Click on the *Set* gadget to set the angle and frequency for cyan, magenta, yellow and black when doing four color separations.



The screen angle and screen frequency for cyan, magenta, yellow and black can be set independently. If the *No Separations* option is selected in the *Print* requester, the *Cyan*, *Magenta* and *Yellow* gadgets will be ghosted because the black separation will be the only one printed.

If the *Mechanical Separations* option is selected in the *Print* requester, the *Cyan*, *Magenta* and *Yellow* gadgets will be ghosted because the angle and frequency must be the same for all the separations. Change the *Black* gadgets to alter the angle and frequency for each separation.

Understanding Angles and Frequencies

A screen is a grid of dots used to create the illusion of grayscales and tints of colors. A box specified as 20% black is printed as a matrix of dots which cover 20% of the area. Because the dots are so small, the eye is fooled into thinking they are a solid color. Screens are used to mix inks when doing four color separations to create shades of other colors.

Art Expression allows you to control the two key variables of screens. You can change the angle at which the dots are aligned and the frequency of the dots. The angle is especially important in four color separations in which four screens overlap. Screen angle is expressed in degrees. If the angles are not set correctly, undesirable moiré patterns will result.

The frequency is a measurement of how many lines of dots are in a given space. This is usually expressed in lines per inch. Sixty lines per inch is suitable for most monochrome work unless you require finer screens. 133 lines per inch is often used for magazines while 150 lines per inch is used for demanding color work such as brochures and books.

Printing Color Separations

The *Print* requester has three options for color separations.

Monochrome Printing

The *No Separations* option should be used when printing to a monochrome or color laser printer. Colors will be printed as grayscales on regular laser printers and as actual colors on color laser printers.

The default screen angle for black is 45° and the default frequency is 60 lines per inch. While you will not need to change the angle for most work, you may want to increase the frequency for finer screens on high resolution devices.

Four Color Separations

The *4 Color Separations* option is used to produce cyan, magenta, yellow and black separations for printing on an offset press. Everything in the illustration will be separated into its CMYK components for printing.

Four color separations are often called process color separations. Process color work should only be done at high resolutions. 2400 dpi on film is the most common resolution used.

The default angles and frequencies for the four colors are:

	Angle	Frequency
Cyan	15°	60 lpi
Magenta	0°	60 lpi
Yellow	75°	60 lpi
Black	45°	60 lpi

These values should be changed to match the optimal angles and frequencies for the imagesetter used for output. The optimal values depend on the output resolution and on the manufacturer and model of the imagesetter.

The screen frequency for all four colors is normally equal. Because of imperfections slightly different angles and frequencies should be used for each ink. For example, for the Linotronic 300 imagesetter used for this manual, the optimal angles and frequencies for 2400 dpi at two different frequencies are:

Frequency 133 lpi			Frequency 150 lpi		
	Angle	Frequency		Angle	Frequency
Cyan	15.0037°	138.142 lpi	Cyan	15.0013°	149.665 lpi
Magenta	74.9963°	138.142 lpi	Magenta	74.9987°	149.665 lpi
Yellow	0°	138.545 lpi	Yellow	0°	149.412 lpi
Black	45°	138.158 lpi	Black	45°	149.671 lpi

Your service bureau must supply you with these values.

Spot Colors

The *Mechanical Separations* option is used to produce a separation for every color used in a picture. This is usually referred to as spot color. Spot colors are printed on presses by using mixed inks instead of creating the colors from CMYK components. The maximum number of spot colors normally used is six because the cost outweighs the advantages of using specially mixed inks.

Spot colors can also be used for applying glosses and varnishes to specific areas.

Using a Service Bureau

There are three ways to print an Art Expression file on an imagesetter:

- print directly from Art Expression on an Amiga connected to an imagesetter;
- print an illustration to disk from Art Expression and download the file from a computer connected to an imagesetter; or
- import an Art Expression EPS file into a PostScript application on a computer connected to an imagesetter and then print the page directly to an imagesetter.

The most common method is to print a file to disk. You should ensure that you use an `ArtExpression.prfonts` file which matches the fonts in the imagesetter to avoid font substitution errors. You can convert text to graphics before printing to avoid downloading fonts or needing resident fonts.

When you print with the *Disk* radio button gadget selected, Art Expression will open a file requester after clicking on *OK* to select a filename for the output file. You should ensure that you choose a name different from the original file name.

Once you have your file printed to disk you can transfer it to an MS-DOS format disk with CrossDOS (for MS-DOS-based service bureaus) or to a Macintosh format disk with Mac-2-DOS (for Mac-based service bureaus). Mac-2-DOS is a Central Coast product and requires an external Macintosh floppy. Alternatively, you can send the file to your service bureau's BBS if they offer one. Large files may require high density floppy drives or removable hard drive cartridges.

Most imagesetters have a maximum print area of 11.7 x 24 inches. Specifying an area larger than 11.7" wide will stop the page from printing. Some imagesetters have 18 inch rolls and can print an area 17.7" wide. Contact your service bureau for more information.

Printing to Preferences Printers

To print to a Preferences compatible printer you must select the *Preferences* gadget from the *Defaults* requester.

There are no options for printing to Preferences since all functions are handled by the Preferences programs. See your Amiga manual for more information on setting Preferences printing options. Printing control is enhanced in Workbench 2 so you should consider upgrading to the latest version of Workbench if you are currently using Workbench 1.3 with a non-PostScript printer.

It is strongly recommended that you have 1MB of chip ram for printing to Preferences.



Appendices & Index



Appendix A: Glossary

Alignment – (1) The positioning of an object relative to other objects or to the page margins. (2) Text object formatting.

Arc – The *Arc* tool is used to draw line and Bézier curve path segments. Bézier curves will be connected to form an arc.

Ascender – The part of a lowercase text character which rises above the main body (x-height), such as the tops of **h**, **b** or **t**.

Attribute – Characteristic assigned to objects: fill style, fill color, line style, line color, cap style and join style.

Autotrace – The process of converting a bitmap picture into a structured drawing which can be edited in Art Expression.

Baseline – An imaginary horizontal reference line upon which all of the characters in a line of text appear to stand.

Basic Shape tools – The *Line*, *Box*, *Rounded Box*, *Ellipse* and *Regular Polygon* tools. They are used to draw basic shapes.

Beveled Join – The flattened vertex of two path segments.

Bézier Curve – A curve defined by two end points and two curve handles.

Bitmap Picture – A graphic image made up of a grid of black and white or colored dots. Bitmapped pictures are available in many formats such as IFF ILBM, TIFF and GIF.

Blend – A series of intermediate objects which change shape and/or color between objects to create the appearance of color gradients and/or shape metamorphosis.

Bounding Box – The box surrounding an object(s) and its rotation point.

Box – The *Box* tool is used to draw squares and rectangles.

A

Buffer – An area of memory used for temporary information storage. The paste buffer is used to store objects for later pasting.

Cap – The shape of the end of a line. There are three Cap styles: butt, round and square.

Click – Press and instantly release a mouse button.

Close Path – The *Close Path* tool is used to close a selected open path.

Closed Path – A path in which the startpoint and the endpoint are connected.

CMYK – A color model based on the combination of percentages of cyan, magenta, yellow and black to simulate other colors.

Color Palette – The selection of colors available in Art Expression, or a saved file of colors which can be loaded into Art Expression's palette.

Color Separation The process of separating color illustrations into individual plates for each component color. Four color separations produce cyan, magenta, yellow and black plates while mechanical separations produce one plate for each spot color used in the illustration.

Composite Path – When two or more paths are merged together, they form a composite path. Transparent holes from where the subpaths intersect. Parts of objects below these holes will be visible while parts under the non-intersecting parts of the composite path will be masked.

Constrain – Some keys such as the Shift key are used to constrain movement to certain axes or aspect ratios.

Convert to Graphics – The conversion of text objects into graphic objects. The text content cannot be changed after conversion, but the objects can now be edited as paths.

Coordinate Bar – The movable bar which displays mouse and object coordinates. The *Coordinate Bar* can be toggled off if desired.

Copy – The storage of object(s) in the paste buffer for subsequent pasting.

Corner Radius – The radius of the corners of round-cornered rectangles.

Crop Marks – Small lines used to show where a page should be trimmed when printed.

Curve Handles – Small circles which appear near Bézier curves when a path is edited with the *Edit Points* tool. Curve handles are used to reshape the curve.

Curve to Line – The *Curve to Line* tool is used to convert a curve segment into a line segment.

Cut – The removal of object(s) from an illustration. Cut objects are stored in the paste buffer for subsequent pasting.

Default – The standard setting used by Art Expression unless changed.

Delete Points – The *Delete Points* tool is used to remove points from a path.

Descender – The part of a text character which falls below the baseline, such as the lower portion of y, g or q.

Dithering – The mixing of colors to create the appearance of additional colors.

DPI – Dots Per Inch: a measurement of the output resolution.

Drag – Hold down the left mouse button and move the mouse. Dragging is used to move and resize objects, to move path points, and to draw objects and paths.

Draw – The *Draw* tool is used to draw line and Bézier curve path segments.

Drawing Units – The units used for measuring distance in an illustration. The default is inches, but any measuring system may be set with the *Drawing Units...* command.

Duplicate – To make a copy of selected object(s) slightly offset from the original.

Edit Points – The *Edit Points* tool is used to edit an object as a path. Paths can be reshaped or changed with the *Edit Points* tool.

Ellipse – The *Ellipse* tool is used to draw circles and ellipses.

Em – A measure of type size defined as a square of the height and width of the font's point size. For example, 12 point type would produce an em of 12 points by 12 points.

Emulsion Down – A printing term for mirrored output.

En – A measure of type size defined as half the width of an em. For example, 12 point type would produce an en of 6 points by 12 points.

A

Endpoint – The last point of a path. The first point of a path is referred to as the startpoint but is also an endpoint.

EPS – Encapsulated PostScript: A file of PostScript language commands enclosed by comments which can be printed to PostScript printers by professional applications. Standard EPS files cannot be viewed or edited by applications. Some EPS files, such as Adobe Illustrator and Art Expression EPS files, can be interpreted and edited because they are in a standard, published format.

Export – To save a copy of an illustration, or part of an illustration, as a file which can be loaded into another program.

Fill Style – The pattern used to shade an object. Available fills include no fill, solid fills and percentage fills.

Final Mode – A display mode in which objects are shown as they will be printed, with line styles, fills and colors shown.

Font – A set of characters in one design. For example, Times Roman.

Freehand – The *Freehand* tool is used to sketch complex paths.

Frequency – Frequency (screen frequency) is the measurement of how many lines of halftone dots fit in a given space. Frequency is measured in lines per inch, or LPI.

Genlock Mode – A display mode in which objects are shown without their line styles, fills or colors on top of a genlocked display for manual tracing. A genlock is a video device which combines your computer image with a video image.

Graphic – A generic term for artwork which can be placed into Art Expression.

Grayscale – A percentage of pure black, ranging from 0% (white) to 100% (black). Objects may be shaded as grayscales by giving them a black percentage fill with the *Line/Fill...* command.

Group – A combination of two or more objects which have a fixed relationship to each other. They are treated as a single unit to simplify editing operations.

Guides – Guides are nonprinting horizontal or vertical lines which span the illustration page. They are used to align objects and may be magnetized to snap nearby objects into alignment when the objects are moved.

Halftone Screen – The rows of dots used by commercial printers to print color separations and percentage fills. The number of lines of dots in an inch (LPI) is the frequency of the screen. The higher the frequency, the finer the screen.

Illustration Window – The window in which you draw your illustration. The illustration window is composed of the page, pasteboard, rulers, close gadget, zoom gadget, depth gadget and scroll bars.

Join – The shape of the corner where line segments join at an angle. There are three Join styles: miter, round and bevel.

Join Points – The *Join Points* tool is used to join two path points into a single point.

Landscape – The horizontal orientation of a document.

Legal – A paper size of 8.5 x 14 inches.

Letter – A paper size of 8.5 x 11 inches.

Ligature – Two or more characters that are fixed together and treated as one.

Line Style – The line pattern, width, cap and join style of an object.

Line – The *Line* tool is used to draw horizontal, vertical and 45° lines.

Line to Curve – The *Line to Curve* tool is used to convert a line segment into a curve segment.

Lock – To fix the position of an object or group to avoid accidental moving, resizing or editing.

Magnify – The *Magnify* tool is used to increase or reduce the view magnification level.

Mask – The technique of blocking out part of background objects with a composite path.

Merge Paths – The *Merge Paths* command is used to join separate objects into a composite path.

Mouseform – The mouse representation on screen can take on different forms depending on the toolbox tool or menu command selected.

Object – (1) The *Object* tool is used to select, move, resize and edit objects. (2) An object is a single illustration element.

Outline Mode – A display mode in which objects are shown without their line styles, fills or colors in order to speed the screen display and to show obscured objects.

A

Page Size – The size of the illustration page. The page size is normally equal to or smaller than the paper size.

Palette – *see Color Palette.*

Pantone Matching System – A color model by Pantone, Inc., which is used to specify spot colors. Pantone colors may be entered into Art Expression by creating colors in the *Line/Fill...* requester.

Paper Size – The size of the printer paper, regardless of the page size.

Pasteboard – The area on all four sides of the illustration page which can be used to draw and store objects.

Path – The segments which make up an object's shape.

Path tools – The *Draw*, *Arc* and *Freehand* tools. They are used to draw complex shapes.

Place – To import a graphic created with Art Expression or another program into an illustration.

Point – (1) A location which defines the end of a segment in a path. (2) A measuring system unit. One point is equal to 1/72 of an inch.

Point Handles – Small squares which appear at the end of segments when a path is edited with the *Edit Points* tool. Point handles are used to reshape a path.

Polygon - *see Regular Polygon.*

Portrait – The term for the vertical orientation of a page.

PostScript – A page description language developed by Adobe Systems, Inc., which is used by programs such as Art Expression to describe a page to a printer or image-setter.

Print Area – (1) The area of the illustration window which will be printed. (2) The area of a sheet of paper on which a printer can print. The print area is smaller than the paper size for most printers.

Process Color – A color which can be separated into its four primary colors. (Cyan, magenta, yellow and black.)

Proportional Font – A font design in which each character has its own width, based on its appearance, removing unsightly gaps between letters.

Registration Marks – Guides printed outside an illustration to help commercial printers align separations.

Regular Polygon - The *Regular Polygon* tool is used to draw objects with a specific number of sides.

Requester – A window which allows you to select options or type in values.

Resize – The act of increasing or decreasing the size of a selected object.

Resolution – The number of dots used to represent an illustration in an area. Resolution is normally measured in dots per inch (DPI).

Revert – Return to the last saved version of an illustration. All changes made since the last time the illustration was saved will be lost.

RGB – A color definition system: Red, Green, Blue. It is a common model used because color monitors add these primary colors to produce other colors.

Rotate – To turn an object around a selected point.

Round-Cornered Box – The *Round-Cornered Box* tool is used to draw squares and rectangles with round corners.

Rulers – Visual aids scaled in the current measuring system units to aid in the positioning of text and objects on a page. Rulers can be superimposed across the top and left hand side of the active document window. As the mouse moves within the page boundaries, its X and Y positions are represented by moving marks on the rulers.

Sans Serif – A font category characterized by a lack of embellishments (serifs) at the end of straight-line strokes. An example is Helvetica.

Scaling – (1) The process of enlarging or reducing an object while maintaining its aspect ratio (X:Y ratio). (2) A print option to print an enlarged or reduced version of an illustration.

Screen – The rows of dots used by commercial printers to print color separations and percentage fills. The number of lines of dots in an inch (LPI) is the frequency of the screen. The higher the frequency, the finer the screen.

Screen Angle – The angle at which a line of halftone dots is rotated so as to avoid moiré patterns and to properly blend colors.

A

Select – (1) The act of choosing an object with the mouse pointer in order to modify it. (2) The act of choosing a menu command, toolbox icon or requester option.

Serif – A font category characterized by embellishments (serifs) at the end of straight-line strokes. An example is Times Roman.

Size Handles – Small squares which appear at the corners and midpoints of an object's bounding box when selected with the *Object* tool. Size handles are used to resize objects.

Skew – To slant an object horizontally or vertically around a selected point.

Snap to Grid – An option which makes objects snap to the grid when drawn, moved or resized.

Snap to Guides – An option which makes objects snap to the guides when moved.

Split Paths – The *Split Paths* command is used to break a composite object's sub-paths into separate objects.

Split Points – The *Split Points* tool is used to break a path open at a specified point. Two endpoints will be created.

Startpoint – The first point of a path. The startpoint is one of a path's endpoints.

Subpath – A path which is part of a composite path.

Text – The *Text* tool is used to place text into an illustration.

Text Object – A string of characters placed in an illustration. Text objects can be edited as text—their content, font, style and size may be changed. Text objects can not be edited as paths unless they are first converted to graphics.

Text Gadgets – The entry areas in requesters in which values may be typed.

Toolbox – The collection of icons initially located at the far right side of the Art Expression screen. The toolbox is used to change working modes, select drawing tools and to change magnification levels.

Typeface – The basic shape, or design, of a character set. i.e., Helvetica.

Unlock – To un-fix the position of an object or group so that it can be moved, resized or edited.

Appendix B: Special Characters

The Art Expression Character Set

i Use the keyboard alternates to enter characters which are not on the Amiga keyboard. Hold down the indicated key while holding down the *Alternate* (and *Shift* if required) keys. Amiga equivalents are case sensitive. If the equivalent is *ALT x*, press the *x* key while holding down the *Alternate* key. If the equivalent is *ALT X*, press the *x* key while holding down the *Alternate* and *Shift* keys.

Art Expression supports many characters in addition to the standard alphanumeric characters. Art Expression uses the Amiga character set to give you access to accented characters and typographic symbols. Computer keyboards do not have enough keys to enter these characters so they must be entered with a combination of keystrokes.

You can refer to the instructions in your Amiga manual for instructions on entering special characters. The following pages list the characters requiring additional keystrokes beyond the basic Amiga keymap. Alternatively, use the *KeyShow* program provided with *Workbench* to learn the character keystrokes.

PostScript fonts use a different character set than the Amiga, so some characters may not be in the same location, or be present at all. Art Expression will attempt to match the character sets as well as possible.

B

Character	Keypresses	Description
«	ALT 9	left guillemot
»	ALT 0	right guillemot
×	ALT x	multiply
÷	ALT X	divide
±	ALT z	plus or minus
¬	ALT Z	logical not
	ALT l	broken vertical bar
¼	ALT 5	one fourth
½	ALT 6	one half
¾	ALT 7	three quarters
¹	ALT 1	raised to power of one
²	ALT 2	raised to power of two
³	ALT 3	raised to power of three
μ	ALT u	mu
°	ALT w	degree / ring accent
♂	ALT b	masculine ord
‡	ALT D	dagger D
þ	ALT T	capital thorn
Ø	ALT O	capital slash O
¤	ALT y	currency
¥	ALT Y	yen
¢	ALT 4	cent
£	ALT L	pound sterling
§	ALT S	section
·	ALT 8	centered period
—	ALT N	en dash
¶	ALT p	paragraph
©	ALT e	copyright
®	ALT r	registered trademark
¿	ALT M	inverted question mark
ß	ALT s	german double s
ª	ALT v	ord feminine
‡	ALT d	dagger d
þ	ALT t	thorn
ø	ALT o	slash o
À	ALT g A	A grave
Á	ALT f A	A acute
Â	ALT h A	A circumflex
Ã	ALT j A	A tilde

Character	Keypresses	Description
Ä	ALT k A	A dieresis
Å	ALT Q	A ring
Æ	ALT A	AE ligature
Ç	ALT C	C cedilla
È	ALT g E	E grave
É	ALT f E	E acute
Ê	ALT h E	E circumflex
Ë	ALT k E	E dieresis
Ì	ALT g I	I grave
Í	ALT f I	I acute
Î	ALT h I	I circumflex
Ï	ALT k I	I dieresis
Ñ	ALT j N	N tilde
Ò	ALT g O	O grave
Ó	ALT f O	O acute
Ô	ALT h O	O circumflex
Õ	ALT j O	O tilde
Ö	ALT k O	O dieresis
Ù	ALT g U	U grave
Ú	ALT f U	U acute
Û	ALT h U	U circumflex
Ü	ALT k U	U dieresis
Ý	ALT f Y	Y acute
ÿ	ALT k Y	Y dieresis
à	ALT g a	a grave
á	ALT f a	a acute
â	ALT h a	a circumflex
ã	ALT j a	a tilde
ä	ALT k a	a dieresis
å	ALT q	a ring
æ	ALT a	a ligature
ç	ALT c	c cedilla
è	ALT g e	e grave
é	ALT f e	e acute
ê	ALT h e	e circumflex
ë	ALT k e	e dieresis
ì	ALT g i	i grave
í	ALT f i	i acute
î	ALT h i	i circumflex

Character	Keypresses	Description
ï	ALT k i	i dieresis
ñ	ALT j n	n tilde
ò	ALT g o	o grave
ó	ALT f o	o acute
ô	ALT h o	o circumflex
õ	ALT j o	o tilde
ö	ALT k o	o dieresis
ú	ALT g u	u grave
ú	ALT f u	u acute
û	ALT h u	u circumflex
ü	ALT k u	u dieresis
ý	ALT f y	y acute
ÿ	ALT k y	y dieresis

Appendix C:

TroubleShooting

Common Problems

This section is designed to help you with any problems you may experience using Art Expression. If you have any difficulties, consult this section first. If your problem is not listed here, or if the solutions suggested here do not solve your problem, contact Soft-Logik technical support at:

314-894-0431 (9am–5pm Central time, Monday to Friday)

See the back of the title page at the start of this manual for information on other customer support options offered by Soft-Logik. Support is also available by mail, fax, BBS and international networks.

Interface and Design

Cannot Access Menus

Click on the illustration window to activate Art Expression. The illustration window must be active to use the menus. This is standard for Amiga software.

Cannot Load Art Expression

Are all the required files installed? Is the stack size set to 20000? The stack size is set with the Workbench's Information command. If you load Art Expression from a shell, you must type "stack 20000" and press *Return* before loading Art Expression.

Did you delete your default font or change its path? If the default font is no longer in the drawer specified by the `ArtExpression.prefs` file, you must choose a different default font and path.

Are all the required files installed correctly? If you booted off a floppy disk, does your Workbench disk have the `Arp.library` file in its `Libs:` directory?

Colors Incorrect on Screen

Change screen modes with the *Screen...* command. 16 color mode provides more screen colors and allows better dithering to give you the appearance of more colors on screen. Check your selected screen colors with the *Screen Colors...* command. You should provide a wide range of colors for general work, or a lot of similar colors for work using shades of one or two colors. For general work, 100% Red, Green and Blue are recommended because they are primary colors for video monitors.

Incorrect Screen Display

Art Expression uses intelligent screen redraws to minimize the amount of time required to redraw the screen. This can occasionally result in an incomplete screen redraw. Press the *Return* key to redraw the entire screen.

Coordinates are Upside Down

Art Expression uses the standard drawing metaphor with the coordinate origin in the bottom left of the page. This is opposite from the DTP system where the coordinates zero point is the top left of the page.

Why Is Art Expression not HotLinks Compatible?

Art Expression is not HotLinks compatible in this release because of limitations in PageStream and Art Expression. Soft-Logik intends to continue HotLinks, Art Expression and PageStream development in the future.

Printing Problems

Cannot Print—All Printers

Test printing with another program. If that program cannot print as well, you likely have a printer or connection problem. If it can print, then you likely have an Art Expression configuration problem.

Cannot Print to PostScript

Is your printer connected properly? Have you selected the applicable printer port from the *Print...* requester? If it is attached via serial, are the baud rate and other options set correctly? Have you selected PostScript from the Defaults... requester?

Color PostScript Printer Prints Black and White: Did you select the No Separation option in the Print requester

Cannot Print to Preferences

Have you selected the correct printer driver from Preferences? Do you have enough chip RAM: to print? Have you selected Preferences from the Defaults... requester? 1MB of chip RAM is recommended. Art Expression uses the Amiga's fill routines and printer drivers so a large amount of chip RAM is required for printing.

Objects filled incorrectly: You do not have enough chip RAM to print filled objects that large at the selected resolution. Add more chip memory.

Lines streaking page: You do not have enough chip RAM to print at the selected resolution. Add more chip memory.

Why Will a Traced Picture not Print?

Some traces have too many points in a path. Art Expression and PostScript both have limits on the number of points in a path. You can reduce the number of points by deleting unneeded points and by splitting composite paths. You can also split points to make separate subpaths which can then be split.

Loading and Saving

Cannot Open Illustration

Is the illustration in Art Expression or Adobe Illustrator 88 format? Other formats cannot be opened. IFF DR2D and Aegis Draw format files may be placed into an illustration with the *Place...* command, but cannot be opened directly. Professional Draw Clip format files may be converted to IFF DR2D with the *Convert* utility included with Art Expression, but cannot be opened or placed.

Adobe Illustrator 3.0 and 4.0 files cannot be placed or opened because the format specifications have not yet been released.

Cannot Export IFF ILBM

Is the IFF.library file in your LIBS: directory? If not, copy it off the program disk.

Only Part of an Illustration was Saved

If object(s) are selected when you save or export an illustration, you will be asked whether you wish to save all objects or only the selected objects. Choose to save all objects if you want to save the entire illustration.

Cannot See or Edit Illustration in PageStream

PageStream cannot edit Art Expression files directly. Art Expression saves in an Encapsulated PostScript format. If you import an Art Expression EPS file into PageStream, a box with a diagonal cross on it will be placed into your document. It can only be printed to a PostScript printer. If you need to see or edit the illustration, you must first export it as Illustrator EPS or IFF DR2D from Art Expression.

Export Adobe Illustrator Splits Composite Objects

The Illustrator 88 EPS format does not support merged paths so Art Expression will save them split into separate objects. This may change the appearance of your illustration if you used composite objects.

Selecting and Drawing Objects

Cannot Select Objects

Is there another object on top of the object you are trying to select? If so, you must send the top object to the back. If the desired object is at the bottom of the stack, you can hold down *Ctrl* and click on it to select it.

Some objects are so small that they are difficult to select. Zoom in to a higher view magnification to make it easier to select, or draw a marquee box around the object to select it.

Unfilled objects: You must click on the path of an object. The path is made up of an object's line and curve segments. You cannot click on an unfilled area of an object, or on a transparent hole of a composite object, to select it.

Will not Draw

PageStream 2 users will find Art Expression's drawing metaphor slightly different. You must drag the mouse to draw objects, not click to start an object and click to end an object. Clicking to start an object will not create an object (except for the Freehand tool), so it will appear that you cannot draw.

Line Drawn from Selected Object

When you choose the *Draw*, *Arc* or *Freehand* (path) tools, a line will be drawn from the endpoint of the selected object if one is selected. This allows you to continue the path. Should you not want to continue from the selected object, choose the *Object* tool, deselect the object (press the *Space Bar*), then reselect the desired path tool.

How Are Points Added?

Art Expression does not have a tool to add points. Simply hold down an *Alt* key, position the mouse pointer over a path segment while the *Edit Points* tool is selected, and click the mouse button.

Text

Fonts Do Not Appear in Requester

You must add font paths when you create new font drawers, or update existing paths when you add more fonts to an existing drawer.

Art Expression's font requester works differently from that in PageStream. Only the fonts in the currently selected path are shown in the font requester. To see fonts from another path, choose the *Manager* gadget, select a different path, then exit the *Font Manager*.

Fonts Do Not Work with Art Expression

Art Expression uses PostScript Type 1 fonts only. Fonts stored in the old Soft-Logik format, Compugraphic format or PostScript Type 3 format cannot be used with Art Expression. You must have an MS-DOS format PFB (Printer Font Binary) file in order to use a font with Art Expression.

Text in Shape Produces Unexpected Results

With some fonts and characters, X and X/Y distortion can produce unexpected results. It is recommended that the *Flatten Curves* option be used for X and X/Y distortion.



Alphabetical Index

A

Actual Size	1.9
Adding Colors	3.35, 3.39
Adding Font Paths	5.6
Adding Points	4.7
Adobe Illustrator	1.20, 1.25, 1.29
Aegis Draw	1.20
Align	3.18
Aligning Points	4.11
Arc tool	2.7
Arc tool, pie slices	2.10
Arcs, defined	2.10
ArtExpression.Prefs	1.11
ArtExpression.prfonts	7.3
Attributes, object	3.30

B

Backup	xi
Basic Shape tools	1.6, 2.1
Basic Shapes, drawing	2.3
BBS	xviii
Bind Text to Path	5.9
Blend	6.6
Blend Crossover	6.8
Blends, optimal	6.9
BME	1.30
Box tool	2.5
Boxes, show objects as	1.27
Boxes, show text as	5.4
Bring Forward	3.5
Bring to Front	3.4

C

Caps, line	3.32
Center, drawing from	1.11, 2.4
Changing Fonts	5.5
Clear (illustration window)	1.8
Clear Rotation Point	3.25
Clip, Profession Draw	1.20
Clipboard	3.10
Cloning Objects	3.12
Close Paths tool	1.6, 2.14
Closed path	2.2
CMYK	3.36
Color	3.35
Color Palettes	3.37
Color Separations	7.8, 7.9
Colors, blending	6.6
Colors, changing	1.14
Colors, number of	1.14
Colors, Pantone	3.38
Colors, screen	1.14
Colors, spot	7.10
Composite Paths	6.11
CompuServe	xviii
Contents	x
Continuing Paths	2.15
Convert (ProDraw to DR2D)	1.20
Convert to Graphics	5.13
Converting Segments	4.13
Coordinate Bar	1.3, 1.15
Coordinates, editing object	3.9
Coordinates, editing point	4.6
Copying Objects	3.10
Crop Marks	7.7

Index

Curved Text	5.9
Curve Handles, moving	4.4
Curve to Line tool	4.13
Custom Screens	1.14
Custom Units	1.11
Cutting Objects	3.10, 3.14

D

Defaults, Setting	xv
Default Font	xv
Default Font Path	xv
Default Graphic Path	xvi
Delete Objects	3.14
Deleting Colors	3.35
Deleting Points	4.7
Deluxe Paint	1.30
Depth gadget	1.3
Depth, objects	3.4
Deselecting Objects	3.3
Display Modes	1.27
Double Click	1.11
Downloaded Fonts	7.4
Drag Copying Objects	3.12
Dragging Handles	3.8
Dragging Objects	3.6
Draw from Center	1.11, 2.4
Draw tool	2.7
Drawing Basic Shapes	2.3
Drawing Paths	2.7
Drawing Prefs	1.11
Drawing Units	1.11, 1.15
DR2D, IFF	1.20, 1.25, 1.29
Duplicate	3.11
Duplicate Objects on Path	6.2

E

Edit Coordinates	3.9
Edit Points tool	1.6, 2.1, 4.1
Edit Text	5.5
Editing Colors	3.35
Editing Points	4.6

Ellipse tool	2.6
Emulsion Down	7.7
Endpoint	2.2
Enter Text	1.13, 5.3
EPS	1.19
EPS, Art Expression	1.20
EPS, Illustrator	1.20, 1.25
Exiting Art Expression	1.31
Expert Draw	1.30
Export	1.23, 1.25
Extended Selection	3.2
Extending Paths	2.15

F

50% View	1.9
Files	xii
Fill Styles	3.33
Fill Percentages	3.33
Final Mode	1.27
Flatten Path	6.1
Flip	3.28
Font Manager	5.6
Font Paths, adding	5.6
Font Paths, removing	5.7
Font, default	xv
Fonts, resident	7.3
Font Path, default	xv
Font Path, selecting	5.6
Font Size	5.3
Font Style	5.1, 5.3
Fonts	5.1, 5.3, 5.5
Fonts, downloaded	7.4
Fonts, included	5.2
Fonts, saving	1.23
Fonts, types of	5.1
Freehand tool	2.11
Full Page	1.9
Full Width	1.9
Full Workspace	1.9

G

Genie	xviii
Genlock Mode	1.27
Graphic Path, default	xvi
Grid	1.16
Grid Snap	1.16
Grid, printing	7.8
Grid, set	1.16
Grid, showing	1.16
Group	3.15
Guide Snap	1.17
Guides	1.17
Guides, set	1.17
Guides, showing	1.17

H

Help	xviii
Help, Online	xviii
Help, technical support	xviii

I

Icons, save	xvii
IFF DR2D	1.20, 1.25, 1.29
IFF ILBM	1.25
ILBM, IFF	1.25
Illustration	1.1
Illustration Page	1.3
Illustration Size	1.8
Illustration Window	1.3, 1.4
Illustration Workspace	1.8
Illustration, open	1.17
Illustrator, Adobe	1.20, 1.25, 1.29
Imagesetting	7.11
Import	1.17
Installation	xii

J

Join Points tool	4.10
Joins, line	3.32

L

Landscape	1.8
Line Caps and Joins	3.32
Line Styles	3.31
Line Thickness	3.31
Line to Curve tool	4.13
Line tool	2.5
Line/Fill	3.30
Loading Art Expression	xiv
Loading Color Palettes	3.37
Lock	3.17
Locked Objects, aligning	3.20
Locking Objects	3.17

M

Magnifier tool	1.6, 1.10
Magnifier tool, increment	1.13
Magnify View	1.10
Managing Fonts	5.6
Marquée Selection	3.3
Masks	6.15
Menus	1.3
Merge Paths	6.11
Moving Curve Handles	4.4
Moving Objects	3.6
Moving Points	4.3
Moving Segments	4.5
Moving Windows	1.5

N

Negative	7.7
New Illustration	1.8

O

Object tool	1.6
Objects	1.2, 2.1
Objects, aligning	3.18

Index

Objects, attributes	3.30
Objects, blending	6.6
Objects, cloning	3.12
Objects, copying	3.10
Objects, cutting	3.10, 3.14
Objects, deleting	3.14
Objects, drag copying	3.12
Objects, duplicating	3.11
Objects, editing coordinates	3.9
Objects, flipping	3.28
Objects, grouping	3.15
Objects, locking	3.17
Objects, moving	3.6
Objects, pasting	3.10
Objects, resizing	3.8
Objects, rotating	3.22
Objects, selecting	3.1
Objects, skewing	3.26
Objects, transforming	3.29
Objects, ungrouping	3.15
Objects, unlocking	3.17
Objects, warping	6.4
Online Help	xviii
Open	1.17
Opened path	2.2
Outline Mode	1.27
Overlapping Paths	3.33, 6.14

P

Page Setup	1.8
Page Size	1.8
PageStream	1.29
Palette, color	3.37
Pantone Colors	3.38
Pasteboard	1.3
Pasting Objects	3.10
Path in Shape	6.4
Path points	2.2
Path tools	1.6, 2.1
Path to Path	6.2
Paths	2.1
Paths, composite	6.11
Paths, continuing	2.15

Paths, drawing	2.7
Paths, merging	6.11
Paths, splitting	6.11
Paths, smoothing	6.1
Paths, flattening	6.1
Percentage Fills	3.33
Pie Charts	2.6
Pie Slice Segments	2.10
Place	1.17, 1.19, 1.21
Point Editing tools	1.7, 2.1, 4.1
Points, adding	4.7
Points, aligning	4.11
Points, deleting	4.7
Points, editing coordinates	4.6
Points, joining	4.10
Points, moving	4.3
Points, selecting	4.3
Points, splitting	4.9
Polygon tool, regular	2.4
Portrait	1.8
PostScript Fonts	5.1, 7.3
PostScript, Choose	xvii, 7.1
Preferences Printing	7.12
Preferences, Choose	xvii, 7.1
Print	7.5
Print Area, clearing	7.2
Print Area, setting	7.2
Print Options (PostScript)	7.6
Printer, port	7.6
Printer, choosing	xvii, 7.1
Printing	7.1
Printing, Preferences	7.12
Professional Draw	1.20, 1.30
Professional Draw Clip	1.20
Professional Page	1.30
Program Settings	1.11
Prompting	1.11
ProVector	1.29

Q

Quit	1.31
------	------

R

Radius, rounded rectangles	1.13
Redraw, screen	1.10
Reduce View	1.10
Registering	xi
Registration Marks	7.7
Regular Polygon tool	2.4
Removing Font Paths	5.7
Reshaping Curves	4.4
Resident Fonts	5.2, 7.3
Resizing Objects	3.8
Resizing Windows	1.5
Required Equipment	xi
Revert to Saved	1.17
RGB	3.36
Rotate	3.22
Rotate, visual	3.22
Rotate, numerical	3.23
Rotate, set point	3.25
Rotation Point, clear	3.25
Rotation Point, set	3.25
Rounded Box tool	2.5
Round-Rect Corner Radius	1.13
Rulers	1.3, 1.15
Running Art Expression	xiv

S

Save	1.23
Save As	1.23
Save Icons	xvii
Saved, revert to	1.17
Saving Color Palettes	3.37
Saxon Publisher	1.30
Screen Angle	7.8, 7.9, 7.10
Screen Frequency	7.8, 7.9, 7.10
Screen Redraw	1.10
Screens, changing	1.14
Scroll Bars	1.3
Segments, moving	4.5
Selecting Font Paths	5.6
Selecting Objects	3.1

Selecting Points	4.3
Selecting Through	3.4
Selecting, extended	3.2
Selecting, marquée	3.3
Send Backward	3.5
Send to Back	3.4
Service Bureaus	7.11
Set Grid	1.16
Set Guides	1.17
Set Print Area	7.2
Set Rotation Point	3.25
Settings menu	1.11
Settings, program	1.11
Shape tools	1.6, 2.1
Show as Boxes, objects	1.27
Show as Boxes, text	5.4
Show Grid	1.16
Show Guides	1.17
Sign Engine	1.29
Size gadget	1.3
Size, illustration	1.8
Size, page	1.8
Skew	3.26
Smooth Path	6.1
Snap to Grid	1.16
Snap to Guides	1.17
Split Paths	6.11
Split Points tool	4.9
Spot Colors	7.10
Spring Load Text	1.12
Spring Load Tools	1.11
Stacked objects	3.4
Starting Art Expression	xiv
Startpoint	2.2
Switching Objects	4.2

T

Technical Support	xviii
Text in Shape	5.11
Text Objects, creating	5.3
Text on a Curve	5.9
Text tool	1.6, 5.3
Text, convert to graphics	5.13

Index

Text, curving 5.11
Text, font 5.3
Text, manipulating 5.8
Text, style 5.1, 5.3
Text, size 5.3
Text, spring load 1.12
Text, warping 5.11
Title Bar 1.3, 1.5
Toggle Fill 3.33
Toggle Line 3.32
Toggle Show Boxes, objects 1.27
Toggle Show Boxes, text 5.4
Toolbox 1.3, 1.6
Tools 1.6
Tools, spring load 1.11
Transform 3.29
Transform, copying 3.12
Transform, moving 3.7
Transform, rotate 3.24
200% View 1.9
Typefaces 5.1

U

Undo 1.13
Undo Available 1.13
Ungroup 3.15
Unlock 3.17
Updating Font Paths 5.6
User Scale 1.9
User Scale tool 1.7

V

Variable Zoom 1.9
View Magnification 1.9

W

Warping Objects 6.4
Warping Text 5.11
Windows, moving 1.5

Windows, resizing 1.5
Workbench 1.14
Workspace 1.3
Workspace, size 1.8

Z

Zoom gadget 1.3
Zoom In 1.10
Zoom Out 1.10



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